

# Market Reaction to the Passage of the Tax Cuts and Jobs Act of 2017

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## **Abstract**

I investigate the market reaction to the events leading up to the passage of the Tax Cuts and Jobs Act of 2017 (TCJA) using short and long window event studies. Using the sample of S&P 1,500 firms, I find positive market reaction to the enactment of the TCJA only in one short window; market reaction to other windows remains weak. This study documents that firms with high marginal tax rate have positive market reaction only in one long window. Further investigation reveals that for the firms with deferred tax assets the market reaction is positive only in one short window and in another long window market reaction is negative. I also find weak evidence that firms with high deferred tax liabilities have a positive market reaction to the passage of the TCJA. In addition, I document that firms with high executive compensation record negative market reactions in the short windows, but no market reaction in the long windows. I finally find that market reaction to the marginal tax rate varies with firm corporate governance only in one short window. Overall, my study contributes to the existing tax and accounting literature by examining investor reaction to the passage of TCJA based on dominant firm characteristics such as marginal tax rates, corporate governance structures, the nature of deferred taxes, and the level of executive compensation for events leading to and after the passage of the Act.

**Keywords:** Tax Cuts and Jobs Act, Event Study, Marginal Tax Rate, Deferred Tax, Executive Compensation.

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## Table of Content

<b>Abstract.....</b>	<b>i</b>
<b>Acknowledgement .....</b>	<b>ii</b>
<b>Table of Content.....</b>	<b>iii</b>
<b>List of Tables .....</b>	<b>v</b>
<b>1. Introduction.....</b>	<b>1</b>
<b>2. Literature review and hypotheses development.....</b>	<b>9</b>
2.1 Market reaction to the changes in the regulatory environment.....	9
2.2 Market reaction to the regulatory tax rate reduction.....	10
2.3 Effect of agency conflicts of free cash flow on the market reaction to the regulatory tax rate reduction.....	12
2.4 Market reaction to the impact on deferred taxes from regulatory tax rate reduction.....	13
2.5 Market reaction to the restriction on the tax deductibility of executive compensation .....	17
<b>3. Methodology .....</b>	<b>20</b>
3.1 Selection of event window.....	20
3.2 Measures of market reaction.....	24
3.2.1 CAPM adjusted return .....	24
3.2.2 Fama-French three factor model adjusted stock returns .....	25
3.2.3 Calculation of cumulative average abnormal returns (CAAR) for short and long event windows .....	26
3.3 Measure for corporate tax rate .....	28

3.4 Measures of corporate governance .....	29
3.5 Measures of DEFTAs and DEFTLs.....	29
3.6 Measures of high-level compensation.....	30
3.7 Model Specifications .....	30
3.8 Control variables.....	32
3.9 Sample firms and data.....	34
<b>4. Empirical Results .....</b>	<b>35</b>
4.1 Univariate analyses .....	35
4.2 Step regression .....	37
4.3 Main Regression estimation.....	38
4.4 Sensitivity analyses using the CAPM model .....	38
<b>5. Summary and Conclusion .....</b>	<b>39</b>
<b>Reference .....</b>	<b>41</b>
<b>Appendix A.....</b>	<b>59</b>
<b>Appendix B.....</b>	<b>64</b>

## List of Tables

Table 1: Time horizon for short and long events .....	22
Table 2: Sample Description.....	34
Table 3: Descriptive Statistics Using the Fama-French Three Factor Model (n = 674) .....	54
Table 4: Univariate Tests of Market Reaction to the Passage of TCJ using the Fama-French three factor model .....	55
Table 5: Univariate Tests of Differences Using the Fama-French three factor model (Using before interest MTR).....	55
Table 6: Step Regression Estimation of CAAR (Using the Fama-French three factor model) for window one and two around the events of TCJA (Using before interest MTR) .....	56
Table 7: Step Regression Estimation of CAAR (Using the Fama-French three factor model) for window three and four around the events of TCJA (Using before interest MTR) .....	57
Table 8: Regression Estimation of CAAR (Using the Fama-French three factor Model) around the events of TCJA (Using before interest MTR).....	58

## 1. Introduction

The primary objective of my thesis is to examine the market reaction to the passage of the Tax Cuts and Jobs Act of 2017 (TCJA) using short and long window event studies. TCJA, effective since January 1, 2018, is described as the most significant revision of the US corporate tax policy since the enactment of the Tax Reform Act of 1986 (TRA-1986) (Slemrod, 2018). Two major changes brought by TCJA are<sup>1</sup>: 1) the shift from the system of progressive tax rates to a flat rate of 21 percent and 2) the repeal of the provision of performance-based compensation as a taxable expense and the introduction of a limit on the total executive compensation tax deduction at \$1 million. TCJA is expected to have a profound impact on publicly traded companies and consequently a broad range of economic repercussions. For example, TCJA is expected to reduce the US tax revenue by nearly \$1.5 trillion over the next ten years (Joint Committee on Taxation (JCT), 2017).

Examining the effect of the TCJA on stock prices is an important research question for several reasons. First, while the frequent changes in laws related to dividend taxes have led to the development of a large body of literature that examines whether dividend taxes are captured in stock prices (Wagner, Zeckhauser, & Ziegler, 2018), the last major reform of US corporate tax dates back to 1986. As a result, it has not been possible for researchers to test the effect of major changes in the corporate tax policy on stock returns, despite the argument that tax policy has a first-order impact on stock returns (Modigliani & Miller, 1963). Second, given the significant changes mandated by TCJA, the Bill became law

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<sup>1</sup>In addition, TCJA contains many other changes such as one-time repatriation tax on the undistributed profit retained abroad, 100% or full depreciation on the capital assets for five years, reduction in individual tax brackets, repeal of state and gift tax, limitation of interest deductibility and indefinite carry forward of net operating losses and mandatory capitalization instead of expensing of R&D expenditures. However, these factors demand separate in-depth analyses which are beyond the scope of this thesis.

within three months of the House Ways and Means Committee releasing its framework (Wagner et al., 2018; Wagner et al., 2018a). The swiftness with which TCJA turned into law makes it an ideal setting to conduct an event study. Finally, because the principal purpose of legislating the TCJA is to spur economic growth (JCT, 2017), this study will aid policy makers in understanding the perceived effectiveness of major changes in the tax policy, particularly as some critics argue that tax cuts do not induce firms to increase their real investment (Bloomberg Businessweek, 2019).

Before the enactment of TCJA, the US had one of the highest statutory tax rates among the member countries of the Organization for Economic Cooperation and Development (OECD) at 38.9 percent (PwC, 2016; OECD, 2016).<sup>2</sup> The US adopted a progressive tax system with the highest federal statutory tax rate of 35 percent for firms with a taxable income exceeding \$10 million annually.<sup>3</sup> Moreover, US firms are required to pay state corporate taxes, which together with federal taxes culminated to one of the highest statutory tax rates among developed economies (Lyon & McBride, 2018). After the enactment of TCJA, the US statutory tax rate is reduced to 25.8 percent which is now slightly above the OECD average of 23.9 percent (excluding the US) (Lyon & McBride, 2018).

Prior literature has shown that capital markets react to exogenous changes in the regulatory tax policy. For example, Lang and Shackelford (2000) report that stock prices move inversely with dividend yield to the announcement of a reduction in the capital gains

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<sup>2</sup>OECD is the association of world major economies and collectively hold 62 percent of global GDP (International Monetary Fund, 2018).

<sup>3</sup>Firms with a taxable income of \$75,001 to \$10 million were required to pay tax at a rate of 34 percent. Firms with a taxable income above \$50,000 but lower than \$75,001 fell into the 25 percent tax bracket. The lowest statutory tax rate was 15 percent for taxable income not exceeding \$50,000.



tax rate under the Taxpayer Relief Act of 1997. Amromin, Harrison, Liang, and Sharpe (2005) document a positive reaction in stock prices to the 2003 dividend tax cuts. Wagner et al. (2018, 2018a) find that stock prices of high tax-paying firms react positively to the expectation of lower corporate tax rate from Donald J. Trump election victory in 2016. Preliminary anecdotal evidence also suggests that the passage of TCJA has been perceived positively by the capital markets. For instance, Forbes (2018) attributes the 6 percent increase in the S&P 500 index in January 2018 to the TCJA.

Although I expect an overall positive market reaction to the passage of TCJA, the Act contains several provisions that impacts firms in different ways, such as one-time repatriation tax on undistributed profit retained abroad, full depreciation on capital assets for five years, a limit on interest deductibility, and indefinite carry forward of net operating loss. As such, I do not expect a unidirectional movement in the stock prices across these firms.

This study contributes to accounting and tax literatures by providing pre- and post-enactment evidence on the market reaction to the passage of the TCJA. While prior studies document the reaction of the capital market from the US 2016 general election to the end of 2017, covering up to the enactment period of the TCJA (Blanchard et al., 2018; Wagner et al., 2018), I extend the literature by empirically measuring the capital market reaction while the TCJA is being effective. As TCJA is a robust and complex enactment, estimating the market reaction while it is being effective would provide policy makers and researchers broader understanding of how changes in the corporate tax rates impact investors' perception of TCJA. Second, the literature is largely silent in exploring the moderating effect of corporate governance structure on firms' marginal tax rates. This study will

provide investors with the knowledge of how the market responses for firms with differential governance structures under the TCJA. Finally, I examine the market reaction not only with regard to the varying degree of deferred taxes across firms but also executive compensation, whereas Wagner et al. (2018, 2018a) does not consider the executive compensation in their study.

First, I expect firms in a previously higher tax bracket to benefit from the shift from a progressive tax policy to a single tax rate of 21 percent because of the likelihood to secure greater amount of investable funds from tax savings under the TCJA. By contrast, firms previously belonging to the lowest marginal tax bracket may experience a reduced undistributed profit because of the higher tax expenses under the TCJA. A lower marginal tax rate creates an opportunity for tax savings for firms by reducing the tax payments to the government.<sup>4</sup> As TCJA reduces the higher marginal tax rates to 21 percent, it increases the probability of securing additional cash flows and profits by firms. Therefore, given the greater likelihood of creating higher shareholder wealth from tax savings, I predict that investors will react positively to the passage of the TCJA for firms previously in a higher tax bracket.

Second, the agency cost of free cash flow that managers being opportunistic would like to invest surplus cash flows in projects that have negative net present value to increase the resources under their control. Jensen (1986) suggests that managers are interested in growing the firm size beyond the optimal level because growth increases the power of managers by enabling them to control more resources. According to Jensen (1986) free

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<sup>4</sup>The likelihood of retaining additional cash flows through tax savings is discussed in the tax avoidance literature (Scholes, Wolfson, Erickson, Maydew, & Shevlin, 2009).

cash flows are the net of cash flows after investing in all positive net present value projects when discounted at the firm cost of capital.

Hart (1995) argues that in the presence of agency costs and incomplete contracts between principals (shareholders) and managers (agent), corporate governance may act as an instrument to reduce the divergent behavior of managers. Jensen and Meckling (1976) also suggest putting in place monitoring devices so that shareholders can reduce the opportunistic activities of their managers. In the same vein, I argue that strong corporate governance structures may increase the likelihood of creating shareholders' wealth by utilizing the cash flows resulting from the tax cuts under the TCJA. The impact of this tax cuts would be more pronounced for firms previously in higher tax bracket. Therefore, I predict that in the presence of strong corporate governance the market reaction to the passage of the TCJA will be more positive for firms previously in higher tax bracket than in lower tax bracket. However, firms belonging to lower tax bracket before the passage of TCJA might not experience a positive market reaction because TCJA increases the marginal tax rate for those firms.

Third, changes in the marginal tax rates affect firms with deferred taxes differently. Deferred taxes arise due to the temporary difference between the GAAP and taxable income and divided into two categories: deferred tax assets (*DEFTAs*) and deferred tax liabilities (*DEFTLs*). *DEFTAs* indicate reduction in the future tax payable and are treated as assets in the balance sheet while *DEFTLs* refer to the increase in the future tax liabilities and are treated as liabilities in the balance sheet.<sup>5</sup> As the TCJA reduces the highest marginal

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<sup>5</sup>Examples of *DEFTAs* includes carryforward of net operating losses, reserve for employee retirement benefits, and reserve for possible loan losses. Examples of *DEFTLs* include undistributed foreign earnings, depreciation differences, and installment sales.

tax rate to 21 percent, firms lose the future tax benefits from *DEFTAs*. Preliminary anecdotal evidence suggests that firms are affected negatively due to high amounts of *DEFTAs* in their balance sheet (The Economist, 2018; Forbes, 2018). For example, Citigroup has \$43.2 billion of *DEFTAs* in its balance sheet (The Economist, 2018) but due to the passage of the TCJA, the firm announces that it intends to write off *DEFTAs* by \$22 billion (Forbes, 2018). As Accounting Standards Codification (ASC) 740 of the Income Tax Act requires firms to adjust tax items as per the changes in the tax laws and rates in the period the law is enacted, many companies will have to reduce their *DEFTAs* due to the reduction in the corporate marginal tax bracket to 21 percent (Forbes, 2018). Conversely, *DEFTLs* increase the future tax liabilities of a firm by reducing the current taxable income with a variety of accounting techniques such as international profits retained abroad and accelerated depreciation. Therefore, I predict that the market will react more negatively (positively) for firms with high *DEFTAs* (*DEFTLs*) to the passage of the TCJA.

Finally, TCJA repeals the provision of tax deductibility of performance-based compensation and requires publicly traded corporations to limit the tax deductibility of executive compensation per covered employee to \$1 million.<sup>6</sup> Prior to the enactment of the TCJA, publicly traded firms were allowed to deduct all performance-based compensation as tax deductible expenses for covered employees under the Section 162(m). The changes in the Section 162(m) under TCJA with regard to executive compensation are likely to increase the income tax expenses for firms with high compensation for covered employees.

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<sup>6</sup>The definition of covered employees includes CEOs, CFOs, and the next three highest paid employees in a listed corporation. Performance-based compensation is defined as the compensation that is contingent on achieving predetermined criteria (Balsam & Ryan, 2007). Components of performance-based compensation includes bonuses, payments based on long-term incentive plan (LTIPs), stock options, and restricted stocks.

In particular, as any executive compensation exceeding \$1 million for each covered employee is taxable and performance-based compensation are unqualified for tax deductibility, firms may have greater tax expenses for executive compensation under the TCJA.

In particular, most of the large firms in US pay their CEOs compensation which is well above \$1 million (Larcker & Tayan, 2017). For example, Bout and Wilby (2017) find that median compensation for CEOs of S&P 500 firms is above \$10 million in 2016. Moreover, Larcker and Tayan (2017) argue that many covered executives other than CEO also receive compensation exceeding \$1 million. In the pay package of CEOs, base salary constitutes only 11.3 percent (Tonello, 2017), whereas performance-based compensation accounts for a large part of the total compensation (Perry & Jenner, 2001; Balsam, 2002; Edmans, Gabaix, & Jenter, 2017). For example, Edmans et al. (2017) document that in 2014 performance-based compensation constitutes 83 percent of CEO compensation for S&P 500 firms. This indicates that the changes under the TCJA are likely to increase the tax expense of executive compensation for firms and therefore, I predict that the market reaction is more negative for firms with high total executive compensation.

To address the main research question whether TCJA is perceived positively by investors, I investigate the aggregate market reaction of S&P 1,500 firms to the enactment of the TCJA using short and long window event studies. My short and long window events cover the entire legislation process of TCJA as well as when the Act is being effective. The market reaction is calculated using the Fama-French three factor model. Besides, a sensitivity analysis is conducted using the capital asset pricing model (CAPM).

I record positive market reactions to the passage of the TCJA only in one short window. Inconsistent with my first hypothesis, I find scant evidence that the market reaction is positive to the passage of the TCJA. This study also documents little evidence about the hypothesis that the market reaction for firms previously with high marginal tax rate (*MTR*) is positive. Only in one long window firms with high marginal tax rate have positive market reaction. Therefore, I find weak support for my prediction that firms previously with high *MTR* are able to create more shareholder wealth than firms with low *MTR*. The market reaction for firms with high *DEFTAs* is positive only in the one short window and in the long window the market response is negative. I document weak support for my prediction that firms with high deferred tax liabilities will have more positive market response than firms with low deferred tax liabilities. The market reaction for the firms with high executive compensation (*COMP*) is negative in the short windows, whereas in the long windows there is no capital market reaction. Finally, conditional on the level of corporate governance, the incremental effect of *MTR* on market reaction is positive only in the short window. However, in other windows I find no effect for the interaction between corporate governance and marginal tax rate.

The remaining of the thesis is organized as follows. Section two describes the literature review and the development of testable hypotheses. Section three discusses the data and the methodology of the study. Section four analyzes the results and section five summarizes and concludes the thesis.

## **2. Literature review and hypotheses development**

### *2.1 Market reaction to the changes in the regulatory environment*

Numerous studies have been conducted on the reaction of the capital markets to the changes in regulatory environment. For example, Jain and Rezaee, (2006) and Zhang (2007) measure the market reactions to the enactment of Sarbanes-Oxley Act (SOX). Specifically, Zhang (2007) studies the economic consequences of enacting SOX by examining the market reactions to the events prior and subsequent to the enactment of the Act. She reports that US firms have negative abnormal returns around the legislative events of SOX. She attributes the negative market reactions to the higher compliance costs for firms. Conversely, Jain and Rezaee (2006) documents a positive market response to the events that signal the likelihood of the passage of the SOX. They attribute this positive reaction to the investors' expectation of greater transparency and accountability from the implementation of SOX. Their study also reports that the capital market reacts negatively to the events that are ambiguous or signal that the Bill would not be enacted. They posit that the reason for negative market returns is due to the expectation that the Bill would not be stringent enough to ensure transparency in public corporations (Jain & Rezaee, 2006). Karamanou and Nishiotis (2005) and Armstrong, Barth, Jagolinzer, and Riedl (2010) study the capital market reactions to the adoption of International Financial Reporting Standards (IFRS) in Europe. Karamanou and Nishiotis (2005) conduct an event study on the voluntary adoption of International Accounting Standards (IAS) in Europe. They find that firms that declare the adoption of IAS experience a positive abnormal return. Armstrong et al. (2010) study the capital market reaction in eighteen European countries to the adoption of International Financial Reporting Standards (IFRS). They find that firms with lower pre-

adoption information quality experience a positive abnormal return because of the expectation that IFRS adoption will increase the information quality of firms. The positive return in stock prices is more pronounced for banking institutions. Armstrong et al. (2010) record a negative abnormal return for countries with a weak enforcement accounting regulation.

Several prior studies focus more on tax regulations. Givoly and Hyan (1992) measure how the market reacts to the changes in deferred taxes in response to the passage of TRA-1986 during the Regan Administration. They argue that if investors view *DEFTLs* as liabilities, then a reduction in corporate tax rate under TRA-1986 should be reflected in the stock prices. Shackelford (2000) measures the market reaction to the changes in the capital gains tax laws. He finds that reaction of investors to the enactment of Tax Payer Relief Act-1997 is rapid and material. As the US had one of the highest statutory tax rates among the OECD countries (PwC, 2016; OECD, 2016) and the TCJA is considered to be the most significant revision of the US corporate tax policy since TRA-1986 (Slemrod, 2018), events leading to and after the passage of the TCJA provide an opportunity to examine the investors' reaction to understand whether TCJA is able to achieve its objective- increasing the growth of US economy (JCT, 2017), as opponent of this legislation argue that the reduction in corporate tax may not spur the economic growth (Bloomberg Businessweek, 2019).

## *2.2 Market reaction to the regulatory tax rate reduction*

The traditional view of corporate tax savings suggests that shareholder value is maximized due to the transfer of wealth from the government to firms (Scholes et al., 2009; Desai & Dharmapala, 2009). As shareholders are the residual claimants of assets, the

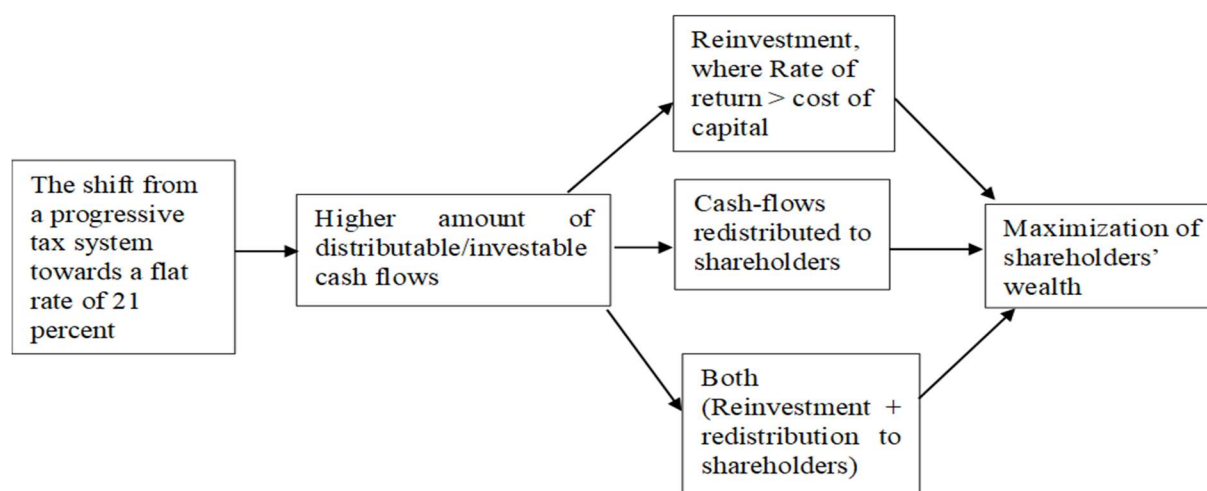


reduction in the marginal corporate tax rate increases the after-tax claims of shareholders by diverting funds from government to firms. Specifically, the surplus in the after-tax profit and cash flows can be invested in projects with positive net present value (NPV) or paid to shareholders as dividends, either of which increases the shareholder value (Scholes et al., 2009). Therefore, when corporate tax rate is reduced, return to shareholders increases. As TCJA reduces the US corporate marginal tax rate from 35 percent to 21 percent, I predict a positive market reaction to the enactment of TCJA.

**H1:** *There is a positive market reaction to the passage of TCJA.*

Moreover, given the reduction in the highest marginal tax rate under TCJA, it is expected that cash flows available to firms will be greater for firms previously in a higher marginal tax bracket. As a result, firms with greater amount of cash flows from tax cuts under TCJA have higher likelihood in increasing shareholder wealth than firms with lower amount of cash flows. The process of shareholders' wealth creation is depicted in Figure 1.1.

Figure 1.1: Linkage between the reduction in the marginal tax rate and shareholder value



Therefore, I predict a more positive reaction for firms with previously higher marginal tax rate because of the likelihood of creating higher shareholders value.

***H2:** There is a more positive market reaction to the passage of TCJA for firms with previously higher marginal tax rates.*

### *2.3 Effect of agency conflicts of free cash flow on the market reaction to the regulatory tax rate reduction*

Agency theory of free cash flow states that when a firm has excessive free cash flows which cannot be utilized by investing in profitable projects, managers have a tendency to grow the firm size even if it decreases shareholder wealth (Jensen, 1986). This theory argues that managers, being rational utility maximizers, will try to maximize their utilities in a transaction rather than maximizing shareholder wealth. According to Jensen and Meckling (1976) owners (shareholders) delegate decision making power to managers (agents) through contractual agreements. Being separated from management, shareholders cannot directly monitor the activities of their agents. This increases the likelihood of conflict because self-serving agents may act opportunistically to increase their own benefits instead of increasing the wealth of their owners.

Elaborating on the issue, Jensen (1986) argues that managers are interested in growing the firm size beyond the optimal level because growth increases the power of managers by enabling them to control more resources. Blanchard, Lopez-de-Silanes, and Shleifer (1994) find that an increase in cash flows increases managers' opportunistic behavior. As reduction in the marginal tax rate from 35 percent to 21 percent under the TCJA is likely to lead to more free cash flows, managers may invest these funds in projects where rate of return is below the cost of capital.

In the presence of agency conflict, Jensen and Meckling (1976) state that strong monitoring activities, for example, independent auditing, incentive compensation, and restrictions of budget can reduce the managerial opportunism and protect the interest of shareholders. Shleifer and Vishny (1997) argue that corporate governance deals with agency conflict in a way so that shareholders get a return on their investment by reducing the opportunistic behaviors of managers. According to Armstrong, Guay, and Weber (2010) corporate governance is viewed as a set of contracts that align managerial activities with the interest of owners. Conversely, Core, Holthausen, and Larcker (1999) find that firms that have weaker corporate governance experience a greater agency conflict. Brush, Philip, and Margaretha (2000) also record that weak corporate governance leads to the inefficient allocation of free cash flows.

Specifically, as in the presence of strong corporate governance firms previously with higher marginal tax rate are now more likely to secure greater amount of cash flows under TCJA than firms previously with lower marginal tax rate, I predict that firms with strong governance structure might experience a more positive market reaction than firms with weak governance structure.

***H3:** There is a more positive market reaction to the passage of TCJA for firms with previously higher marginal tax rates if they have strong corporate governance structures.*

#### *2.4 Market reaction to the impact on deferred taxes from regulatory tax rate reduction*

The Financial Accounting Standards Board (FASB) postulates in Statement of Financial Accounting Standards (SFAS-109) that firms are required to recognize the temporary differences between book and tax bases. According to SFAS 109 deferred taxes

arise due to the differences between the book income and tax income (e.g., difference between book depreciation base of an asset and its tax base i.e., the amount at which the asset is valued for the purpose of tax by tax authority is different from book treatment) (see Appendix) and are divided into two categories: *DEFTAs* and *DEFTLs*. *DEFTAs* refer to assets that reduce the future taxable income of firms. It can be described as a situation where a firm has paid taxes in advance due to the differences between book income and taxable income. These taxes will be returned to firms in the form of tax relief and overpayment of taxes. *DEFTAs* include compensation related expenses such as stock options and deferred compensation, warranty expense, and impairment of intangible assets. On the other hand, *DEFTLs* are created when taxable income is lower relative to GAAP income and indicate that firms are liable to pay more taxes in future because of the higher book income in the current period. Examples of *DEFTLs* include undistributed foreign earnings, depreciation differences, and installment sales.

Prior literature shows that the association between deferred taxes and future tax payments (savings) depends on the timing of the reversal of *DEFTAs* and *DEFTLs*. Specifically, White et al. (2003) argue that only those components of liabilities that are likely to be reversed are associated with future tax payments (savings). Givoly and Hyan (1992) study how investors react to the impact of news of reduction in the corporate tax rate on the *DEFTLs* that are related with the future tax payments. They find that the capital market reacts positively to the reduction *DEFTLs* from the regulatory reduction in the corporate tax rate. Amir et al. (2001) examine *DEFTLs* arising from depreciation using the valuation model of Feltham and Ohlson (1996). They argue that *DEFTLs* carry value because they indicate the deferral of tax payments for firms. Tang and Firth (2012) study

the relationship between book-tax difference and earnings persistence. They divide the book and tax differences into normal and abnormal components. According to them deferred taxes arising from the difference between accounting rules and tax laws are called normal and deferred taxes originating from the manipulation of book and tax income are termed as abnormal. They find that large normal book and tax difference originating from both regulatory differences and manipulation of earnings lead to low earnings persistence. They also document that large normal book and tax differences show strong earnings and stock returns relation. Joos, Pratt, and Young (2000) also find that large deferred taxes indicate weaker relation between stock returns and earnings. According to them large book and tax differences are indicative of earnings management and as a result, investors has lower trust on earnings reported by the firms. Lev and Nissim (2004) examine the relationship between tax-book income and stock returns. They document that the ratio of tax to book income is highly related to stock prices and can predict future stock returns.

However, Guenther and Sansing (2000, 2004) and Dotan (2003) suggest that the timing of reversal of *DEFTAs* and *DEFTLs* does not guarantee that deferred taxes are value relevant. According to them components of deferred taxes that are associated with future tax payments or benefits are value relevant. In particular, reversal of *DEFTLs* and *DEFTAs* with no corresponding future tax payments or benefit carry no cash flow implications. Prior to the study of Guenther and Sansing (2000, 2004) and Dotan (2003) valuation of deferred taxes was done based on the timing of reversal of *DEFTLs* and *DEFTAs* (Laux, 2013).

According to Dotan (2003) components of *DEFTLs* and *DEFTAs* can be divided into two different groups, depending on the timing of inclusion in GAAP income relative to taxable income. When transactions related to expenses or revenues are shown in GAAP

income (instalment sales, warranty expense, etc.) prior to the taxable income, *DEFTAs* or *DEFTLs* are recognized in the balance sheet before the cash flow related to taxes are realized (Guenther & Sansing, 2004; Laux, 2013). Thus, *DEFTLs* and *DEFTAs* provide value relevant information about future tax benefits or payments that are realized when the deferred tax accounts of an entity reverses.<sup>7</sup>

Second, when transactions are recorded in the taxable income before the GAAP income (e.g., differential depreciation rate between book and tax rate, see Appendix), the *DEFTAs* and *DEFTLs* are reported in the financial statement after the tax related cash flow is realized. Consequently, *DEFTAs* and *DEFTLs* are not associated with future tax benefits or payments of firms and the timing of reversal does not provide value relevant information (Dotan, 2003; Guenther & Sansing, 2004; Laux, 2013).

The shift from progressive tax system to a single tax rate of 21 percent under TCJA affects firms with high *DEFTAs*. An example of *DEFTAs* is carryforward of past losses. To illustrate, Company P incurred net operating loss of \$50 million in year 2017. Assuming the company belonged to 35 percent tax bracket previously, its *DEFTAs* would be \$17.5 ( $35\% \times \$50$ ) million in 2017. As the tax rate changes to 21 percent, the company has to reduce its tax savings from net operating loss (*DEFTAs*) from \$17.5 million to \$10.5 million which requires earnings to be reduced by \$7 million for the year 2017 as per ASC 740. As *DEFTAs* help firms decrease the tax burden, the shift from higher marginal tax rate to a flat 21 percent will reduce the advantage of having high *DEFTAs* in the balance sheet. Therefore, I predict that market will react more negatively for firms with high *DEFTAs*.

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<sup>7</sup>Value relevance refers to the ability of accounting information to capture the information that changes the value of a firm (Schipper, 1999).

***H4:** There is a more negative (less positive) market reaction to the passage of TCJA for firms with high (low) DEFTAs.*

Similarly, the effect of TCJA on *DEFTLs* is the opposite of *DEFTAs* because reduction in the marginal tax bracket reduces the future tax liabilities of firms. Therefore, I posit that firms with high *DEFTLs* will have a more positive stock reaction.

***H5:** There is a more positive (less negative) market reaction to the passage of TCJA for firms with high (low) DEFTLs.*

## *2.5 Market reaction to the restriction on the tax deductibility of executive compensation*

Principal assumption of contracting theory is that both managers and shareholders are rational utility maximizers. Managers will act in the interest of shareholders as long as serving the interest of shareholders serves their interests. This theory suggests that the role of accounting information is to reduce the asymmetry of information between the parties involved in a contractual agreement (Jensen & Meckling, 1976). Given this context, setting an optimal compensation may provide incentive for managers to share all relevant information with shareholders, reducing the information asymmetry between shareholders and managers. Hence, executive compensation is viewed as a way to align the interests of managers with shareholders.

In contrast to the efficient contract theory, the managerial power theory argues that executive compensation is not optimal and rather it is the result of managerial influence over the board of directors (Bebchuk et al., 2002). Bebchuk and Fried (2003) argue that the observed high executive compensation cannot be explained by an optimal contract between a principal and an agent. They stress that CEOs have the power to extract excess

compensation by undermining the optimal contracting model. In particular, the theory emphasizes the ability of CEOs to set their own compensation. Bebchuk and Fried (2003) argue that the more accurate depiction of the CEO pay processes is that the CEO sets his or her own compensation packages. They conduct an extensive review of literature on executive compensation and conclude that executive compensation is best explained by the managerial power theory because efficient contracting is not adequate to explain the soaring CEO compensation. Even though CEO compensation has been experiencing an extremely high growth, there are some constraints that limit the size of the compensation. Bebchuk and Fried (2003) called these constraints as “outrage”, as they are indicative of the negative reaction of public to the extremely high managerial compensation. It suggests that public perception of high managerial pay package constrains the CEO to increase his or her pay package even higher.

Before the enactment of TCJA, there was a tax incentive for publicly traded companies to design compensation contracts through performance-based compensation under the Section 162(m) (Balsam & Ryan, 1996). Specifically, as the Section 162(m) allowed performance-based compensation as tax deductible expense, firms were able to reduce their tax expenses for compensation paid to covered employees by tying executive compensation to firm performance. Conversely, I argue that because of the repeal of tax deductibility of performance-based compensation under TCJA, firms may have lost the tax incentive to tie executive compensation to performance. Firms’ increased tax expenses with respect to executive compensation is evident by the estimated collection of additional \$9.3 billion tax revenue over the next ten years by the Internal Revenue Service (IRS) from



repealing the provision of tax deductibility of performance-based compensation (JCT, 2017).

Kastiel and Noked (2018) analyze the proxy statement filed by the US firms for the fiscal year 2017. Among others, they calculate the pre- and post-TCJA tax expenses for executive compensation for Starbucks. They find that under the TCJA tax expenses for executive compensation should be around 266 times higher than pre-TCJA for Starbucks.<sup>8</sup> They claim that this higher tax expenses for executive compensation under TCJA is not unique to Starbucks. According to them most of the US firms may get affected from the new Section 162(m) under the TCJA.

Section 162 (m) was first enacted in 1993 by President Bill Clinton to control the rapid increase in executive compensation (Businessweek, 2006). However, the unintended consequence of Section 162(m) is that it led to even more increase of executive compensation (Frydman & Jenter, 2010). Perry and Zenner (2001) suggest that because of the provision of tax deductibility, performance-based compensation increased significantly contributing to the faster increase of executive compensation. In this regard, Wallace and Ferris (2009) argue that the rise in the performance-based executive compensation in the post 1993 period significantly undermines the spirit of Section 162(m). Balsam and Ryan (1996) record that some firms take advantage of Section 162 (m) by setting the executive contract in a way so that they can reduce the overall taxes for the firm and employees. TCJA addresses this issue by eliminating the provision of tax deductibility for performance-based executive compensation. Therefore, I expect that the market reaction

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<sup>8</sup>Before TCJA tax cost for executive compensation should be about \$154,808, whereas after the TCJA it should be around \$8,673,918 for Starbucks, which is approximately 266 times the tax cost under pre-TCJA. <https://www.stanfordlawreview.org/online/hidden-tax-cost-executive-compensation/>

for firms with high executive compensation will be more negative relative to firms with low executive compensation.

***H6:** There is a more negative market reaction to the passage of TCJA for firms with higher total executive compensation.*

### **3. Methodology**

#### *3.1 Selection of event window*

The rationale for conducting an event study comes from the efficient market hypothesis (EMH). EMH suggests that stock prices are the unbiased estimate of the change in future cash flows that reflect all the relevant information concerning publicly traded firms (Fama, 1970). Schwert (1981) argues that if the changes in the regulatory environment have implications for the capital market, the effects of regulation changes will be impounded into stock prices at the time when such changes are first predicted. He suggests that the impact of regulation changes on the capital market can be examined using stock returns with event study methods. On the other hand, prospect theory (Kahneman & Tversky, 1979) argues that market may not behave rationally because average investors may have limited cognitive ability and time in processing the information available to them. As a result, this may lead to a situation where stocks are either under or overpriced compare to their efficient market values. Since the TCJA is a robust and complex enactment, investors may take longer time to process the information contained in it. Therefore, conducting longer window event studies may resolve this problem by documenting market reaction when TCJA is being effective for some time.

For example, Cutler (1988) examines the market reaction to the passage of TRA-1986 using event study techniques. He documents a mixed market reaction to the enactment of TRA-1986. Downs and Tehranian (1988) measure the changes in the fundamental value of stocks from the enactment of Economic Recovery Tax Act (ERTA) of 1981. They document that capital market is estimated to have lost 6.1 percent in fundamental value relative to market from the passage of the ERTA-1981.

The framework for the TCJA was first released on September 27, 2017 and it was turned into law on December 22, 2017, when President Donald Trump signed the Bill. Given the scale of changes TCJA mandates, the Bill got passed in both the Houses of Congress at an impressive pace (Wagner et al., 2018, 2018a) making it an ideal candidate to conduct an event study.

This study considers four event windows and divides them into two categories – short and long horizons, over which the market reactions to the passage of TCJA are measured. The rationale for examining different time horizons are: 1) markets often take time to absorb information (Wagner et al., 2018, 2018a). So, the combination of both long and short window studies can capture the market reactions to the events leading to the passage of TCJA and the post enactment window and 2) investors' perception about the TCJA may change over time. Therefore, using short and long window horizons is likely to capture the change in the reaction, if any, of investors about TCJA over time.

For the short window event I choose September 27, 2017, when the framework for TCJA was first revealed, and I calculate the abnormal returns for 3 days and 5 days around the announcement date (+1,0, and -1) and (-2, 0, and +2). The reason for choosing two short windows is that it allows researchers to measure the magnitude of the abnormal stock

returns around the event date, and thus provides a measure of the impact of the event on the wealth of the shareholders (Kothari & Warner, 2006). In the context of this thesis, the two short event windows provide evidence about the effects of the specific event, releasing the framework for TCJA on September 27, 2017, on stock prices that help corporate policy makers understand how capital market reacts to their policy making steps.

The two long event windows are from September 27, 2017 to December 31, 2017; and September 27, 2017 to June 30, 2018. The reason for selecting June 30 as the end date for the long window horizon is somewhat arbitrary. However, it represents six months of TCJA being effective and provides a measure of the market reaction about how investors perceive TCJA relative to the time when efforts to pass the Act were ongoing in the US Congress. In the following table the time horizon of events is described in detailed.

**Table 1: Time horizon for short and long events**

Event horizon	September 27, 2017	September 27, 2017 to December 30, 2017	September 27, 2017 to June 30, 2018
Category	Short window	Long window	Long window
Description of events	Framework for TCJA revealed	From the day when framework for TCJA first released to the end of 2017	The day when framework for TCJA released to six months of being effective

The long window events not only capture all the relevant changes in stock prices leading up to the passage of TCJA but may also be able to measure how investors perceive

the changes brought by the Act six months into the Bill being effective. Oler, Harrison, and Allen (2008) argue that short run event window studies should be supplemented by long run window studies if the event of interest is complicated and less frequent. They suggest that investors may react irrationally given the complexities of the event and therefore, the short run event window may lead to a wrong evaluation as to the efficiency of the capital market. Fama and French (2007) also argue that there are settings where investors may act biasedly based on an erroneous set of beliefs making the stock prices less informative. Hence, studies based on long window event may provide evidence about the efficiency of stock market (Brown & Warner, 1980).

#### *Confounding events*

As confounding events contaminate the market reaction, I control for events such as dividend and earnings announcement, analyst forecast, news of a new product launch, and mergers or acquisition in my short event window. Firms associated with these events are not considered for empirical analysis. Confounding events are checked using Google Advanced Search Option from September 25, 2017 to September 29, 2017. I find 16 firms that are affected by confounding events. However, I did not control for confounding events in long event horizon.

This study does not measure the market reaction for each of the legislative effort that was made in Congress leading up to the passage of TCJA because with Republicans holding majority in both the Houses, it was expected that the Bill would be passed without any significant filibustering from the Democrats. However, the long window horizon chosen in this study covers all the legislative events that took place in the US Congress to the passage of the TCJA. In addition, despite having differences between the versions of

the House Republican and Senate Bills, they were similar in principle. For example, both the House of Representatives and the Senate proposed the same corporate tax rate, a shift towards a territorial tax system and a reduction in the tax rate on the repatriated profit.

### *3.2 Measures of market reaction*

Market reaction is measured based on CAPM adjusted returns and Fama-French three factor adjusted returns. Theoretically, the principal reason for using adjusted return is to eliminate the impact of other variables that distort the effect of the factor of our interest. For example, firms with large market capitalization may outperform firms with small capitalization. So, adjusting for firm size may provide the actual measures of stock returns that result from the passage of TCJA. However, Wagner et al., (2018) argue that firm size may itself be affected by the TCJA. Since controlling factors in the Fama-French model may themselves be subject to the effect of the TCJA, market reaction using the model will be lower than the CAPM (Wagner et al., 2018). Therefore, I use both CAPM and Fama-French three factor model to measure the market reaction.

#### *3.2.1 CAPM adjusted return*

The CAPM model measures stock returns with respect to the systematic risk. This is also called the single factor market model because it considers only market risk. The model is described below:

$$R_{j,t} = \alpha + \beta_j R_{mt} + \epsilon_{j,t} \quad (1)$$

where,

$R_{j,t}$  = Return of an individual stock  $j$  on  $t$  day;

$\alpha$  = Risk free rate of return;

$\beta_j$  = Movement in the individual stock returns with respect to the market risk;

$R_{mt}$  = Market return on the day  $t$ .

$\epsilon_{j,t}$  = Random variable with an expected value of zero and uncorrelated with  $R_{mt}$ .

To calculate the market beta ( $\beta_j$ ) for each firm, I use the Ordinary Least Squares (OLS) regression of stock returns above the risk-free rate for each day from July 27, 2016 to July 26, 2017. In accordance with Wagner et al. (2018, 2018a), the rate of return of the one-month T-bill is used as the risk free rate. The abnormal stock returns are calculated for each day surrounding short and long window horizons. The CAPM based abnormal return is calculated by following formula-

$$A_{jt,CAPM} = R_{jt} - (\hat{\alpha} + \hat{\beta}_j R_{mt}) \quad (2)$$

### 3.2.2 Fama-French three factor model adjusted stock returns

The second measure Fama-French three factor model (Fama & French, 1993) is used to calculate stock returns because Fama and French (1995) argue that market beta ( $\beta_j$ ) as an explanatory variable does not reflect all the risk factors associated with stock returns. They propose that risk premium on returns of stock depends on the relative size of the company and the ratio between the book and market values of the stock. Their model described below controls for firm size and risk associated with high versus low book to market ratio.

$$R_{jt} = \alpha + \beta_j R_{mt} + s_j SMB_t + h_j HML_t + \epsilon_{jt} \quad (3)$$

The formula used in calculating the abnormal return using the Fama-French three factor model is-

$$A_{jt,FF} = R_{jt} - (\hat{\alpha} + \hat{\beta}_j R_{mt} + \hat{s}_j SMB_t + \hat{h}_j HML_t) \quad (4)$$

where,

$SMB_t$  = Difference between average return on large market capitalization portfolios and small market capitalization portfolios;

$HML_t$  = Difference between the average return for firms with high book to market ratio and average return for firms with low book to market ratio;

### 3.2.3 Calculation of cumulative average abnormal returns (CAAR) for short and long event windows

The average abnormal return ( $AAR$ ) for short and long event horizons is calculated using an ordinary least squares ( $OLS$ ) regression with 150 daily returns from trading day  $t = -210$  through trading day  $t = -61$ , relative to the passage of TCJA with an estimation window from July 27, 2016 to July 26, 2017. The  $AAR$  is calculated as a simple cross-sectional average over the number of firms in the sample ( $N$ ). In accordance with the prior literature (Joos & Leung, 2013) I choose a three-day ( $t_{-1}$  to  $t_{+1}$ ) and five-day window ( $t_{-2}$  to  $t_{+2}$ ) for the short window horizon to calculate the cumulative average abnormal return ( $CAAR$ ) to measure the degree of the market reaction to the declaration of enacting TCJA. There is a 60-day gap between the estimation period and the three-day window event to prevent the estimation period from including the information that might have already been absorbed in the stock prices.

The  $AAR$  is calculated by the following equation-

$$AAR_t = \frac{\sum_{j=1}^N A_{jt}}{N} \quad (5)$$

where,  $t$  is defined as the trading days relative to the event date.  $AAR$  is calculated by dividing the total abnormal returns with the number of firms in the sample ( $N$ ). The  $CAAR$  is expected to capture the market's response to the passage of TCJA. It is calculated



by the formula stated below. Over a window of three days (short window) from  $t-1$  to  $t+1$  relative to the event date of September 27, 2017, the *CAAR* is-

$$CAAR_{t-1,t+1}(CAPM \text{ adjusted}) = \sum_{j=1}^N \sum_{t-1}^{t+1} A_{jt,CAPM} \quad (6)$$

$$CAAR_{t-1,t+1}(Fama - French \text{ adjusted}) = \sum_{j=1}^N \sum_{t-1}^{t+1} A_{jt,FF} \quad (7)$$

Over a window of five days (short window) from  $t-2$  to  $t+2$  relative to the event date of September 27, 2017, *CAAR* is-

$$CAAR_{t-2,t+2}(CAPM \text{ adjusted}) = \sum_{j=1}^N \sum_{t-2}^{t+2} A_{jt,CAPM} \quad (8)$$

$$CAAR_{t-2,t+2}(Fama - French \text{ adjusted}) = \sum_{j=1}^N \sum_{t-2}^{t+2} A_{jt,FF} \quad (9)$$

*CAAR* in long event horizon studies is likely to capture the delayed market reaction (Kothari & Warner, 1997) and provides information on the change in investors' perception of the event, TCJA, over the period. In this study I consider three long event windows and in calculation of *CAAR* only working days have been taken into consideration. The first long event horizon for which *CAAR* is calculated is from September 27, 2017 to December 30, 2017. In that period, I find sixty-four working days.

$$CAAR_{t_0, t+63}(CAPM \text{ adjusted}) = \sum_{j=1}^N \sum_{t_0}^{t+63} A_{jt,CAPM} \quad (10)$$

$$CAAR_{t_0, t+63}(Fama - French \text{ adjusted}) = \sum_{j=1}^N \sum_{t_0}^{t+63} A_{jt,FF} \quad (11)$$

The second long event window is from September 27, 2017 to June 30, 2018 which includes one hundred and ninety working days.

$$CAAR_{t_0, t+189}(CAPM \text{ adjusted}) = \sum_{j=1}^N \sum_{t_0}^{t+189} A_{jt,CAPM} \quad (12)$$

$$CAAR_{t_0, t+189}(Fama - French \text{ adjusted}) = \sum_{j=1}^N \sum_{t_0}^{t+189} A_{jt,FF} \quad (13)$$

### 3.3 Measure for corporate tax rate

For marginal tax rate this study employs the model of simulated tax rate proposed by Blouin, Core, and Guay (2010). In their paper the authors estimate the marginal tax rate (*MTR*) based on the future taxable income using a non-parametric approach. The database for *MTR* is available in Compustat-Capital IQ. According to Shevlin (1990) *MTR* for a firm is defined as “the changes in the present value of the current cash flow paid to (or recovered from) the tax authorities as a result of earning one extra dollar current and expected future taxes paid on an additional dollar of taxable income (TI)” (p.51). Prior to TCJA, firms were allowed to carryforward and carryback their net operating losses (NOLs) (Graham, 1996). Because of this provision in Income Tax Code, the tax implication of income earned today is not only limited to current earnings but also past and future taxable income (Graham, 1996). In addition to NOLs, a firm’s current *MTR* is also affected by investment tax credit because of the prior and subsequent year adjustments in the taxable income (Graham, 1996). Alternative minimum tax also has a similar impact on *MTR*. Consequently, *MTR* is a better estimate of corporate tax rate than statutory tax rate.

Blouin et al. (2010) use two different equations for taxable income to calculate the *MTR*: i) taxable income before transitory items and ii) taxable income after transitory items. Transitory items refer to the special items, extraordinary items and income or loss from discontinued operations. Equations for taxable income to calculate the *MTR* are described below.

*“Taxable income before transitory items = EBIT + interest on leases - timing differences estimated using deferred tax expense reported on the income statement data / maximum statutory tax rate”* (Blouin et al., 2010, p-212).

*“Taxable income = Taxable income before transitory items + pre-tax extraordinary items and dis- continued operations/ 1- maximum statutory tax rate + special items”* (Blouin et al., 2010, p-212).

For the purpose of this study, I use *MTR* before interest. As firms employ debt in the capital structure to reduce the taxable income, *MTR* before interest expense will not be affected by the tax advantage of debt.

### *3.4 Measures of corporate governance*

For the indicator of corporate governance, I use the governance index proposed by Gompers, Ishii, and Metrick (2003). They divide the governance index into five groups: Delay- defined as the tactics to delay the hostile takeovers, Voting- defined as voting rights related to shareholders, Protection- defined as the protection of directors and officers against liability incurred during working for the firm, Other- it includes other takeover defenses and state laws. Each group is represented by number of provisions and in total there are 28 provisions. Then governance index is calculated by adding one point for each provision that restricts the rights of general shareholders. If *GINDEX* is  $\leq 5$ , the firms fall under Democracy Portfolio (strong corporate governance) whereas,  $GINDEX \geq 14$  indicates firms in the Dictatorship portfolio (poor corporate governance). Dividing *GINDEX* in two components would help to understand how firms with better governance react relative to the poorly governed firms to the passage of the TCAJ. However, *GINDEX* can be between 1 and 28 based on the points given on the 28 provisions.

### *3.5 Measures of DEFTAs and DEFTLs*

Proxies for the *DEFTAs* and *DEFTLs* are chosen from Compustat balance sheet item- Deferred Tax Assets-Long Term, Deferred Tax Assets-Current, Deferred Tax

Liabilities-Long Term and Deferred Tax Liabilities-Current. Because change in the tax rate impacts both short term and long term deferred taxes (ASC 740), I select both to compute the deferred taxes reported by the firms in the S&P 500. Consistent with the prior literature (Laux, 2013) I scale the *DEFTAs* and *DEFTLs* by total assets to control for firm size. I calculate the median industry (S&P 1500) *DEFTAs* and *DEFTLs* to identify firms with high or low deferred taxes in their balance sheet.

### *3.6 Measures of high-level compensation*

Components of executive compensation are taken from the Execucomp database with the item name TDC1. It comprises of base salary and performance-based compensation. Performance-based compensation is represented by bonuses, payment based on long-term incentive plan (LTIPs), stock options, and restricted stocks. As proxy for executive compensation is skewed to the right, I take the natural logarithm of sum of compensations (over 1 million for each covered executive) of top five executives. As under the TCJA firms are allowed to deduct up to \$1 million as taxable expense for each covered employee, I take compensation paid above \$1 million.

### *3.7 Model Specifications*

To examine the determinants of the market reaction to the passage of TCJA and to differentiate among the hypotheses discussed above, I employ a cross-sectional regression using aggregate *CAAR* for the two long windows and two short windows. I assume that the market reaction to the passage of TCJA is captured by the stock prices (Fama, 1970). To examine the determinants of the market reaction I use the following:

$$CAAR_{3,5,64,190} = \beta_0 + \beta_1 MTR\_BI_{i,t} + \beta_2 DEFTAs_{i,t} + \beta_3 DEFTLs_{i,t} + \beta_4 GINDEX_{i,t} + \beta_5 COMP_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 DEBT_{i,t} + \beta_8 ROA_{i,t} +$$

$$\beta_9 MB_{i,t} + \beta_{10} FOROP_{i,t} + \beta_{11} RND_{i,t} + \beta_{12} R_{mt} + \beta_{13} SMB_t + \beta_{14} HML_t + \epsilon_{jt} \quad (14)$$

where,

$CAAR_{3,5,64,190}$  = Cumulative abnormal return for three-day and five-day window for short event horizon (September 27, 2017); sixty-four days (from September 27, 2017 to December 30, 2017), and hundred ninety days (from September 27, 2017 to June 30, 2018) respectively;

$MTR\_BI_{i,t}$  = Marginal Tax Rate at the end of year  $t$  for firm  $i$ ; defined as marginal tax rate before interest expense;

$DEFTAs_{i,t}$  = Deferred Tax Assets at the end of the year  $t$  for firm  $i$ , scaled by total assets;

$DEFTLs_{i,t}$  = Deferred Tax Liabilities at the end of the year  $t$  for firm  $i$ , scaled by total assets;

$GINDEX$  = Gompers, Ishii, and Metrick (2003) Governance Index;

$COMP_{i,t}$  = Natural logarithm of sum of compensations (*over 1 million for each executive*) of top five executives; Compustat item name TDC1;

$SIZE$  = Natural logarithm of total assets;

$MB$  = Ratio of market to book value;

$DEBT$  = Total debt ( $DLC+DLTT$ ) scaled to total assets ( $AT$ ). Compustat item of debt in current liabilities (DLC) and total long term debt (DLTT);

$ROA$  = Income before extraordinary items ( $IB$ ) scaled by lagged total assets ( $AT$ );

*FOROP* = Firms with foreign operations. It is indicated by foreign exchange income(loss); *FOROP* equal to 1, if the firm has foreign exchange income (loss) otherwise 0. Compustat item is *FCA*;

*RND* = Research and development expenses scaled by total assets (*AT*). Compustat item is *XRD*.

### 3.8 Control variables

Five control variables are used to capture the true effect of the enactment of TCJA on stock returns. First, I control for the firm size because large firms are more likely to be affected by the reduction in the higher marginal tax rate than small firms. Firm size is calculated as the natural logarithm of market value of total assets. Large firms with high *DEFTAs* and *DEFTLs* have to adjust their tax accounts because of the enactment of TCJA. In addition, as the prior literature suggests that executive compensation is correlated with firm size (Hallock & Torok, 2010), I introduce market value of equity as a proxy for firm size. Second, market to book ratio (*MB*) is calculated by dividing market capitalization of equity with book value. As high *MB* indicates firms with growth opportunities, I predict that firms with higher growth potential will be affected more by the reduction in the highest marginal tax rate because it will help them to invest to a greater extent. Finally, following the prior literature Dhaliwal, Heitzman, and Li (2003), I include factors in the Fama and French (1995) three factor model, *R<sub>mt</sub>*, *SMB*, and *HML*, as control variables.

As discussed in my hypotheses, I predict a positive coefficient for *MTR\_BI*, the indicator for firm marginal tax rate, because shifting from a progressive tax system to a single corporate tax rate may enable firms to secure additional cash flows. Second, as *DEFTAs* refers to the reduction in the future tax payments by reducing the taxable income of firms, I predict a negative coefficient for *DEFTAs* because firms are likely to experience

a reduction in their *DEFTAs* because of the tax cut. Third, *DEFTLs* are defined as the tax liabilities firms are required to pay in future. I predict a positive coefficient because firms are likely to experience a reduction in their tax liability from the enactment of TCJA. *COMP* indicates total executive compensation including base salary and performance-based compensation. I predict a negative coefficient for firms with high total executive compensation because TCJA repeals the provision of tax deductibility for performance-based compensation and total tax deductibility for executive compensation is limited to \$1 million.

As the presence of corporate governance has an effect on the benefits of reduction in tax rate, this study tests for a moderating effect between *MTR\_BI* and *GINDEX*. A moderating variable is defined as the variable that affects the strength of relationship between a dependent and a predictor variable. In this study, the presence of corporate governance moderates the relationship between the effective marginal tax rate (*MTR*) and *CAAR*. I predict a positive association between firms with strong *GINDEX* that were previously in a higher marginal tax rate because a strong corporate governance structure reduces the agency cost allowing shareholders to benefit from the reduction in the tax rate under TCJA. I assume that *CAAR* during the enactment and post enactment periods of TCJA will reflect the interaction effects of corporate governance with marginal effective tax rate. I use the following ordinary Least Squares (OLS) model to examine the market reaction to interaction effects (*MTR\_GINDEX*) between *MTR* and *GINDEX*-

$$CAAR_{3,5,64,190} = \beta_0 + \beta_1 MTR_{BI_{i,t}}(+) + \beta_2 DEFTAs_{i,t}(-) + \beta_3 DEFTLs_{i,t}(+) + \beta_4 GINDEX_{i,t}(?) + \beta_5 MTR_{BI} * GINDEX_{i,t}(-) + \beta_6 COMP_{i,t}(-) + \beta_7 SIZE_{i,t} +$$

$$\beta_8 DEBT_{i,t} + \beta_9 ROA_{i,t} + \beta_{10} MB_{i,t} + \beta_{11} FOROP_{i,t} + \beta_{12} RND_{i,t} + \beta_{13} R_{mt} + \beta_{14} SMB_t + \beta_{15} HML_t + \epsilon_{jt} \quad (15)$$

where,

$MTR * GINDEX$  = Moderating effect between marginal tax rate and governance index.

All other variables are as defined as above.

### 3.9 Sample firms and data

To investigate the market reactions to events leading up to the passage of the act, I start with companies from the 2017 S&P 1500 index, for which data are available in the Center for Research in Security Prices (CRSP) and with financial statement information in the COMPUSTAT database. I omitted firms with no returns during the study period. Table 2 shows the total number of observations used in this study. I choose my sample (S&P 1500) based on September 27, 2017 because legislative efforts to enact the TCJA was first documented on that day. Number of sample firms used in this analysis (674 firms) does not reflect the initial sample size (S&P 1500) of 1506. The reason for elimination of 832 firms are attributed to the unavailability of data in CRSP (52), firms missing in Compustat (1), lack of governance (345), and marginal tax rate (4). Besides, non-US firms (50), financial firms (315), firms with less than \$1 million common equity (43) are also left out, and firms with confounding events in the short window (16).

**Table 2: Sample Description**

<b>Sample Derivation</b>	<b><i>n</i></b>
S&P 1500 Constituents on September 27, 2017 as listed in COMPUSTAT	1,500
Less: Insufficient return data to calculate CAAR	(52)
Less: Observations without financial statement data in Compustat	(1)



Less: Non-US firms	(50)
Less: Financial firms (SIC 6000-6999)	(315)
Less: Assets less than \$1 million, or negative common equity	(43)
Less: Missing marginal tax rate data	(4)
Less: Missing governance data	(345)
Less: Firms with confounding events in the short window	(16)
<i>Final Sample</i>	<hr/> 674 <hr/>

## 4. Empirical Results

### 4.1 Univariate analyses

Table 3 provides summary statistics for 674 firms based on the Fama-French model. The mean *CAAR* in all of the four windows is positive. In window (-1, +1) and window (2, +2) mean *CAAR* is 0.000 and 0.003 respectively. In window (0, +63) and (0, +189) *CAAR* is 0.009 and 0.014 respectively. The mean and median value of *MTR\_BI* (0.327 and 0.339 respectively) and *MTR\_AI* (0.313 and 0.335 respectively) indicate that sample firms do not differ substantially in terms of marginal tax rate. Interquartile range ( $Q_3 - Q_1$ ) for *MTR\_BI* (0.018) and *MTR\_AI* (0.023), an indicator of variability in the data set, also shows that marginal tax rate does not vary significantly among the sample firms. Table 3 also shows that interquartile range for deferred tax liabilities (*DEFTLs*) (0.075) is higher than deferred tax assets (*DEFTAs*) (0.041) indicating a greater variation in *DEFTLs* than *DEFTAs*. The mean and median leverage (*DEBT*) are 27.3 and 28.0 respectively. The average *GINDEX* is 9.209 and *COMP* has a mean value of 8.892. The average and median return on assets (*ROA*) are almost similar which are 5.5 percent and 5.2 percent respectively. Firms with foreign operations (*FOROP*) has the mean value of 42.2.

[Insert Table 3 here]

Table 4 shows the market reaction to the passage of the TCJA using the Fama-French three factor model. *CAAR* in window (-2, +2) is positive and statistically significant at 1 percent. All other *CAARs* are not statistically significant. This indicates that market reaction to the passage of the TCJA is very scant.<sup>9</sup>

[Insert Table 4 here]

In Table 5 (using the Fama-French three factor model) sample firms are partitioned based on high and low *MTR\_BI*. The mean *CAAR* for top and bottom 50 percent of sample firms are not statistically significant in any of the event windows. When firms are divided into quintile, the top and bottom 20 percent firms have the positive mean (0.028) and median (0.027) *CAAR* in window (0, +63) which are statistically significant at 10 percent and 1 percent level respectively. The results in this table suggest that investors' reaction for firms with high marginal tax rate is very little, whereas there is no market reaction for firms with low marginal tax rate.

[Insert Table 5 here]

In an untabulated analysis (using the Fama-French three factor model) the sample is partitioned by firms with high and low *DEFTLs*. Median (0.023) and mean (0.042) *CAAR* in window (0, +189) are statistically significant at 5 percent and 10 percent respectively for firms with top 50 percent *DEFTLs*. This result shows very weak support for the prediction that firms with high *DEFTLs* are positively affected from the tax cut under TCJA.

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<sup>9</sup>When the regression is run including firms (345) for which only *GINDEX* is not available, I find that *CAAR* in window (0, +63) and (0,+189) is positive and statistically significant at 1 percent.

In an untabulated analysis (using the Fama-French three factor model) the sample is partitioned by high and low *COMP*. Firms with high executive compensation (top 50 and 20 percent firms) have median and mean negative *CAAR* in window (-1, +1) (significant at 1 percent and 10 percent respectively). *CAAR* in other windows, however, are not statistically significant.

#### 4.2 Step regression

Table 6 and Table 7 report the step regression where market reaction is calculated using the Fama-French three factor model for the three main tax variables (*MTR\_BI*, *DEFTAs*, and *DEFTLs*). The principal reason for running step regression is to find out that to what extent the main variables of my study are able to explain for market responses. Only in window (0, +189), *MTR\_BI* is significant at 5 percent level. *DEFTAs* have negative coefficients in window (0, +189) which is statistically significant at 5 percent level. However, when control variables are added, *DEFTAs* lose its significance. In window (-2, +2) *DEFTAs* has positive coefficient (significant at 5 percent) which contradicts the prediction made in the *H4*. *DEFTLs* have positive coefficient (0.442) in window (0, +189) in the step regression which is statistically significant at 5 percent level. However, when rest of the variables are added in the third step, *DEFTLs* lose its significance in window (0, +189). The variable *COMP* has negative coefficient in window (-1, +1) and (-2, +2) which is statistically significant at 1 percent in in the baseline regression. In long windows *COMP* coefficient has no statistical significance. This indicates that in the long run market does not react to the level of compensation paid to the covered executives. The change in the R-square is the highest in step three for all four windows.<sup>10</sup>

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<sup>10</sup>When the regression is run including firms (345) for which only GINDEX is not available, statistical significance for *MTR\_BI* improves substantially (significant at 1%) in window (0, +63) and (0,+189).

[Insert Table 6 and 7 here]

#### 4.3 Main Regression estimation

Table 8 reports the regression results for *CAAR* with marginal tax rate. Coefficient for interaction between *MTR\_BI\*GINDEX* is negative as predicted and statistically significant (at 5 percent) in window (-2, +2). As higher *GINDEX* indicates weak governance and lower *GINDEX* stands for strong governance, the negative coefficient indicates that conditional on the level of corporate governance, the marginal tax rate has a positive effect on *CAAR*.<sup>11</sup> However, *MTR\_BI\*GINDEX* is not significant in any other windows. This indicates that the role of corporate governance in creating shareholder wealth when marginal tax rate is reduced is very limited. Regression coefficients for *MTR\_BI* is positive and significant at 10 percent level in window (-1, +1), (0, +63), and (0, +189). In window (-2, +2) *MTR\_BI* is significant at 5 percent level. *DEFTAs* and *DEFTLs* are statistically significant at 5 percent only in window (-2, +2). In window (-1, +1) and (-2, +2) coefficient for *COMP* is significant at 5 percent and in all other windows it is insignificant. This indicates that in the long horizon firms are not affected by the TCJA with respect to the level of compensation paid to their covered employees.

[Insert Table 8 here]

#### 4.4 Sensitivity analyses using the CAPM model

A sensitivity analysis has been conducted using the CAPM model to measure the market reaction to the passage of TCJA. The results largely consistent with what I find

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<sup>11</sup>When the regression is run including firms (345) for which only *GINDEX* is not available, coefficient for *MTR\_BI* has a higher statistical significance in all four windows. However, coefficient for *MTR\_BI\*GINDEX* loses its significance in window (-2,+2) but in window (0,+63) it has significance of 5%.

using the Fama-French three factor model. *CAAR* in window  $(-2, +2)$  is significant at 10 percent. Similar to the results found in the CAPM model, *CAARs* in windows  $(-1, +1)$ ,  $(0, +63)$ , and  $(0, +189)$  are not statistically significant. A step regression is also run to examine the market reaction for the three main tax variables (*MTR\_BI*, *DEFTAs*, and *DEFTLs*). Only in window  $(0, +63)$  *MTR\_BI* has a positive sign and significant at 5 percent. However, in the baseline regression *MTR\_BI* loses this significance in window  $(0, +63)$ . *DEFTAs* in window  $(0, +63)$  and  $(0, +189)$  are statistically significant at 10 percent and 5 percent respectively. *DEFTLs* have a negative coefficient with statistical significance of 1 percent in window  $(-1, +1)$ .

The interaction effect between *MTR\_BI* and *GINDEX* is also tested using the CAPM model. Similar to the results found in the CAPM model, the interaction between *MTR\_BI* and *GINDEX* is significant in window  $(-2, +2)$  at 5 percent. In window  $(0, +63)$ , *MTR\_BI\*GINDEX* is marginally significant at 10 percent. Similarly, *COMP* coefficient is significant at 1 percent in window  $(-1, +1)$  and  $(-2, +2)$ .

## 5. Summary and Conclusion

Changes in the structure of the US marginal tax rates under TCJA are the most comprehensive since the enactment of TRA-1986 (Slemrod, 2018). Given the scale of change, it is expected that the capital market would price the passage of the TCJA. As TCJA contains numerous provisions that affect firms in different ways, I do not predict a unidirectional movement in the stock prices. Proponents of TCJA argue that by reducing the tax burden, TCJA will allow firms to invest more money in the economy. For example, TCJA will reduce the federal tax revenue by around \$1.5 trillion over the next ten years which will help grow the US economy 0.7 percent higher on average in each year from

2018 to 2027 relative to the base line projection by Congressional Budget Office (JCT, 2017). Opponents of the legislation believe that as long as there is no demand for outputs in the market, tax cut will not induce firms to invest in capital assets (Bloomberg Businessweek, 2019). Moreover, TCJA does not provide clear directions as to how tax revenue deficit will be met from reduction in the marginal tax rate. As capital market is deemed to be the litmus test for any legislation targeting the economic firms, I investigate the links between TCJA and reaction of investors. More specifically, I contribute to this important debate, by empirically examining the link between marginal tax rate, *DEFTAs*, *DEFTLs*, executive compensation, and the stock market reactions from the day framework for TCJA was first revealed by the House Ways and Means Committee through six months into the Act being effective.

Using the S&P 1500 firms from Compustat, I assess the market reaction to the passage of the TCJA by examining the market responses to the relevant regulatory events in short and long event windows. I document the positive market reaction only in one short window; market reaction to other windows is weak. This provides a scant evidence in support of my hypothesis that the capital market reacts to the passage of the TCJA. As the study records positive market reaction for firms with high marginal tax only in one short window, I find little support for my hypothesis that investors' response is more positive for firms previously in higher marginal tax bracket than firms in low marginal tax bracket. While firms with deferred tax assets are positively affected in one short window, in the long window firms are negatively affected. On the other hand, I find very little evidence that firms with deferred tax liabilities benefit from the reduction in marginal tax rate under TCJA. Results for interaction effects between marginal tax rates and corporate governance

are significant only in short window (-2, +2). Finally, firms with high executive compensation are negatively affected in short windows.

My study is subject to several limitations. First, I did not check for confounding events for my long event windows. However, I did control for confounding events in short windows. I attempted to check confounding events in long horizon. Unfortunately, nearly all of the sample firms are affected by events such as dividend announcement and abnormal growth forecast. Second, apart from the factors that I consider in my study, the TCJA contains numerous provisions that affect firms in multi-directional ways. For example, changes with regard to the undistributed profit retained abroad, debt in the capital structure, capitalization of research and development expenditures, reduction in the individual tax bracket, and limitation of interest deductibility might influence the measures of my market reactions. However, I introduce control variables, for example, firms with foreign income (loss), research and development expenditures, and debt to minimize the effect of these extraneous factors. Third, the corporate governance index (Gompers et al., 2003) I use is an old dataset as it was not updated after 2006. The reason for using Gompers et al., (2003) governance index is that I do not have the access to other corporate governance proxies. This might also contribute to the insignificance of my results. Finally, as firms are still waiting for the Internal Revenue Service guidelines as to the few provisions of the TCJA, capital market might not absorb all the information contained in the TCJA within the time horizon I studied. Therefore, measuring market reaction may partially reflect the how investors actually perceive the passage of the TCJA.

There are number of avenues through which this thesis can be extended in future. First, a subsample analysis can be performed in accordance with the tax exposure of firms

(i.e., who benefitted the most from the TCJA). This analysis may provide us with the information about which industry (e.g., manufacturing, technology, and financial) benefits or loses from the enactment of the TCJA. Besides, as the reaction of investors is not unidirectional under TCJA, sample firms can be grouped based on the firm characteristics, for example, earnings retained in abroad, capitalization of R&D, deferred taxes, and executive compensation to capture the reaction of capital markets more accurately. Second, I do not examine how the reduction in the marginal tax rate affects tax avoidance because it is too early to check for the effect of tax cuts on tax avoidance. Since corporate tax reduction does not take place frequently, the enactment of the TCJA provides us a unique opportunity to test the impact of tax cuts on tax avoidance. Therefore, in future this thesis can be extended by investigating whether reduction in the marginal tax rate reduces the tax avoidance activities of firms. Third, as estimation window of this study coincides with the President Donald J. Trump election campaign, calculation of abnormal return might be biased because market might absorb the information of tax cuts from the election victory of Donald J. Trump. Therefore, setting a more unbiased estimation window might provide a much better measure of market reaction. Fourth, as proxy used for the corporate governance (GINDEX) variable in this study is not updated since 2006, other measures such ownership by institutional investors might be used so that a large sample can be retained to test the moderating effect between marginal tax and corporate governance. Finally, firms with undistributed profit retained abroad are affected under TCJA, effective tax rate can be used to as a proxy to control for the firms with high profit holdings outside the US.



## Reference

- Amir, E., M. Kirschenheiter, and K. Willard. (2001). The aggregation and valuation of deferred taxes. *Review of Accounting Studies*, 6(2-3), 275-297.
- Amromin, G., Harrison P., Liang, N., & Sharpe, S. (2005). How Did the 2003 Dividend Tax Cut Affect Stock Prices and Corporate Payout Policy? *Federal Reserve Board*, NEBR 2005-57. Washington, D.C.
- Armstrong., C. S., Barth, M. E., Jagolinzer, A. D., & Riedl, E. J. (2010). Market Reaction to the Adoption of IFRS in Europe. *The Accounting Review*, 85(1), 31-61.
- Armstrong, S. C., Guay, R. W., & Weber, P. W. (2010). The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics*, 50(2-3), 179-234.
- Balsam, S. (2002). *An Introduction to Executive Compensation* (First ed.). Orlando, Florida: Academic Press.
- Balsam, S., & Ryan., D. (1996). Response to Tax Law Changes Involving the Deductibility of Executive Compensation: A Model Explaining Behavior. *The Journal of the American Taxation Association, Supplement*, 1–12.
- Barth, M., Beaver, W., & Landsman, W. (2001). The relevance of the value relevance literature for financial accounting standard setting: another view. *Journal of Accounting and Economics*, (1-3), 77.
- Bebchuk, L. A., & Fried, M. J. (2004). *Pay without Performance: The Unfulfilled Promise of Executive Compensation*. Cambridge and London: Harvard University Press.

- Bebchuk, L., Fried, J., & Walker, D. (2002). Managerial Power and Rent Extraction in the Design of Executive Compensation. *The University of Chicago Law Review*, 69(3), 751-846.
- Beebe, J. B. a. J. (2018). Can the TCJA Save the Corporate Income Tax? From Rice University's Baker Institute for Public Policy
- Bergstresser, D., & Philippon, T. (2006). CEO Incentives and Earnings Management. *Journal of Financial Economics*, 80(3), 511-529.  
doi:<http://www.sciencedirect.com/science/journal/0304405X>
- Blanchard, O., Collins., C. G., Jahan-Parvar, R. M., Pellet, Thomas & Wilson, B. A. (2018). Why Has the Stock Market Risen So Much Since the Us Presidential Election? (Publication no. <https://doi.org/10.17016/IFDP.2018.123>). from FRB International Finance Discussion Paper No. 1235
- Blanchard, O., Lopez-de-Silanes, F., & Shleifer, A. (1994). What Do Firms Do with Cash Windfalls? *Journal of Financial Economics*, 36(3), 337-360.
- Blaylock, B., Shevlin, T., & Wilson, R. J. (2012). Tax Avoidance, Large Positive Temporary Book-Tax Differences, and Earnings Persistence. *The Accounting Review*, 87(1), 91-120.  
doi:10.2308/accr-10158
- Blouin, J., Core, J. E., & Guay, W. (2010). Have the tax benefits of debt been overestimated? *Journal of Financial Economics*, 98, 195-213. doi:10.1016/j.jfineco.2010.04.005
- Bout, E. A. W., B. (2017). S&P 500 CEO Compensation Increase Trends. *Harvard Law School Forum on Corporate Governance and Financial Regulation*. <https://perma.cc/B63J-D4RR>
- Brown, S., & Warner, J. (1980). Measuring security price performance. *Journal of Financial*

- Economics*, 8(3), 205-258.
- Cable, D., & Vermeulen, F. (2016). Stop Paying Executives for Performance. *Harvard Business Review Digital Articles*, 2-7.
- Chan, K. H., Mo, P., & Tang, T. (2016). Tax avoidance and tunneling: Empirical analysis from an agency perspective. *Journal of International Accounting Research*, 15(3), 49-66.
- Congress, U. S. (2017). *Estimated Budget Effects Of The Conference Agreement For H.R.1, The "Tax Cuts And Jobs Act"*. Retrieved from <https://www.jct.gov/publications.html?func=startdown&id=5053>
- Core, E. J., Holthausen, W. R., & Larcker, F. D. . (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51(3), 371-406.
- Cutler, D. (1988). Tax Reform and the Stock Market: An Asset Price Approach. *The American Economic Review*, 78(5), 1107-1117. Retrieved from <http://www.jstor.org/stable/1807170>
- Dhaliwal, D., Heitzman, S., & Li, O. Z. (2003). Taxes, Leverage, and the Cost of Equity Capital. *Journal of Accounting Research*, 44(4), 691-723.
- Desai, A. M., & Dhammika, D. (2009). Corporate Tax Avoidance and Firm Value. *The Review of Economics and Statistics*, 91(3), 537.
- Desai A. M., Dyck. A., & Zingales, L. (2007). Theft and taxes. *Journal of Financial Economics*, 84(3), 591-623.
- Dey, A. (2008). Corporate Governance and Agency Conflicts. *Journal of Accounting Research*, 46(5), 1143-1181.
- Donaldson, S. A. (2018). *Understanding the Tax Cuts and Jobs Act* Research Paper No. 2018-07.

- College of Law. Georgia State University. Retrieved from  
<https://ssrn.com/abstract=3096078> or <http://dx.doi.org/10.2139/ssrn.3096078>
- Dotan, A. (2003). On the value of deferred taxes. *Asia-Pacific Journal of Accounting and Economics*, 10(2), 173-186.
- Downs, T., & Tehranian, H. (1988). Predicting Stock Price Responses to Tax Policy Changes. *The American Economic Review*, 78(5), 1118-1130.
- Edmans, A., Gabaix, X., & Jenter, D. (2017). Executive Compensation: A Survey of Theory and Evidence. *The National Bureau of Economics Research*. NBER Working Paper No. 23596.
- Eli, O., & David, Y. (2000). Taking Stock: Equity-Based Compensation and the Evolution of Managerial Ownership. *The Journal of Finance*, 55(3), 1367.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383-417.
- Fama, E. F., & French, K. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56.
- Fama, E. F., & French, K. (1995). Size and Book-to-Market Factors in Earnings and Returns. *The Journal of Finance*, 50(1), 131-155.
- Fama, E. F., & French, K. (2007). Disagreement, tastes, and asset prices. *Journal of Financial Economics*, 83(3), 667-689.
- Feltham, G. A., & Ohlson, A. J. (1996). Uncertainty Resolution and the Theory of Depreciation Measurement. *Journal of Accounting Research*, 34(2), 209-234.
- Ferris, K. R., & Wallace, J. S. (2009). IRC Section 162(m) and the law of unintended consequences. *Advances in Accounting*, 25, 147-155. doi:10.1016/j.adiaac.2009.06.004

- Frydman, C., and Jenter, D. (2010). CEO compensation. *Annual Review of Financial Economics*, 2, 75-102.
- Frydman, C., & Molloy, R., S. (2011). Does Tax Policy Affect Executive Compensation? Evidence from Postwar Tax Reforms. (No 16812). from NBER Working Papers, National Bureau of Economic Research.
- International Monetary Fund. (2018). World Economic Outlook Database Retrieved from <https://www.imf.org/external/pubs/ft/weo/2018/01/weodata/index.aspx>
- Givoly, D., & Hayn, C. (1992). The Valuation of the Deferred Tax Liability: Evidence from the Stock Market. *The Accounting Review*, 67(2), 394-410.
- Graham, R. J. (1996). Proxies for the corporate marginal tax rate. *Journal of Financial Economics*, 42(2), 187-221.
- Guenther, D., & Sansing, R. (2000). Valuation of the firm in the presence of temporary book-tax differences: The role of deferred tax assets and liabilities. *The Accounting Review*, 75(1), 1-12.
- Hallock, K., & Torok, J. (2010). *Top Executive Compensation in 2009*. Retrieved from New York:
- Hanlon, M., & Slemrod, J. (2009). What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement. *Journal of Public Economics*, 93, 126-141. doi:10.1016/j.jpubeco.2008.09.004
- Hart, O. (1995). *Firms, Contracts, and Financial Structure*. Oxford, UK: Clarendon Press.
- Kastiel, K. N., N. (2018). The “Hidden” Tax Cos of Executive Compensation. *Stanford Law Review Online*, 70, 179-191.
- Fox, J. (2006, November 26). How Bill Clinton Helped Boost CEO Pay. *Bloomberg Businessweek*. Retrieved from <https://www.bloomberg.com/news/articles/2006-11->

26/how-bill-clinton-helped-boost-ceo-pay

Jensen, C. M. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review Papers and Proceedings*, 76(2), 313-329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360.

Joint Committee on Taxation. (2017). *Estimated Budget Effects of the Conference Agreement for H.R. 1, the Tax Cuts and Jobs Act*. JCX-67-17, The US Congress.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: an analysis of decision under risk. *Econometrica*, 47(2), 263-291.

Kastiel, K. N., N. (2018). The “Hidden” Tax Cost of Executive Compensation. *Stanford Law Review Online*, 70, 179-191.

Kothari, S. P., & Warner, J. B. (2006). Econometrics of Event Studies. In *Handbook of Corporate Finance: Empirical Corporate Finance* (Vol. A): Elsevier/North-Holland.

Kothari, S. P., Laguerre, T. E., & Leone, A. J. (2002). Capitalization versus Expensing: Evidence on the Uncertainty of Future Earnings from Capital Expenditures versus R&D Outlays. *Review of Accounting Studies*, 7(4), 355-382.

Lang, H. M & Shackelord, A. D. (2000). Capitalization of capital gains taxes: evidence from stock price reactions to the 1997 rate reduction. *Journal of Public Economics*, 76(1), 69-85.

Larcker, F. D. & Tayan, B. (2017). CEO Compensation: Data Spotlight. *Stanford Graduate School of Business Corporate Governance Research Initiative* (2).

doi:<https://perma.cc/2F89-8CL9>

Laux, R. C. (2013). The Association between Deferred Tax Assets and Liabilities and Future Tax Payments. *The Accounting Review*, 88(4), 1357-1383. doi:10.2308/accr-50417

- Lawrence, H. S., Barry, P. B., James, T., & Philip, M. W. (1981). Taxation and Corporate Investment: A q-Theory Approach. *Brookings Papers on Economic Activity* (1), 67-140.  
doi:10.2307/2534397
- Lev, B. & Nissim, D. (2004). Taxable Income, Future Earnings, and Equity Values. *The Accounting Review*, 79(4), 1039-1074.
- Lyon, B. A., & McBride, A. W. (2018). Assessing U.S. Global Tax Competitiveness after Tax Reform. *National Tax Journal*, 71(4), 751-788.
- Malkiel, B. G., & Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383-417.
- Mayberry, M. A., McGuire, S. T., & Omer, T. C. (2015). Smoothness and the Value Relevance of Taxable Income. *Journal of the American Taxation Association*, 37(2), 141-167.  
doi:10.2308/atax-51252
- Modigliani, F., & Miller, M. H. (1963). Corporate Income Taxes and the Cost of Capital: A Correction. *The American Economic Review*, 53(3), 433-443.
- Ohrn, E. (2018). The Effect of Corporate Taxation on Investment and Financial Policy: Evidence from the DPAD. *American Economic Journal: Economic Policy*, 10(2), 272-301.
- Oler, D. K., Harrison, J. S., & Allen, M. R. (2008). The danger of misinterpreting short-window event study findings in strategic management research: an empirical illustration using horizontal acquisitions. *Strategic Organization*, 6(2), 151-184.
- Pankaj, J. K., & Z., R. (2006). The Sarbanes-Oxley Act of 2002 and Capital-Market Behavior: Early Evidence. *Contemporary Accounting Research*, 23(3), 629.
- Paul, G., Joy, I., & Andrew, M. (2003). Corporate Governance and Equity Prices. *The Quarterly Journal of Economics*, 118(1), 107.





- of Gains and Losses. *Journal of the American Taxation Association*, 11(2), 51.
- Shleifer, A. & Vishny, W. R. (1997). A Survey of Corporate Governance. *The Journal of Finance*, 52(2), 737-783.
- Simon, H. A. (1952). A Comparison of Organisation Theories. *The Review of Economic Studies*, 20(1), 40-48.
- Slemrod, J. (2018). Tax Reform and Tax Experts. *The Journal of the American Taxation Association*, In press.
- T, D. (2018). Companies with Deferred Tax Liabilities Big Tax Reform Winners. . *Forbes*.
- Tang, T. Y. H. (2017). The Value Implications of Tax Avoidance Across Countries. *Journal of Accounting, Auditing & Finance*, 1-24. doi:10.1177/0148558x17742821
- Tang, T. Y. H., & Firth, M. (2012). Earnings Persistence and Stock Market Reactions to the Different Information in Book-Tax Differences: Evidence from China. *The International Journal of Accounting*, 47(3), 369-397.
- Tankersley, J. (2017). Bill Signals Top Tax Priority of G.O.P. Is to Help Corporations. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/11/16/us/politics/republican-tax-plans-corporations.html?action=click&module=RelatedCoverage&pgtype=Article&region=Footer>
- Tankersley, J., & Rappeport, A. (2017). A Hasty, Hand-Scribbled Tax Bill Sets Off an Outcry. *The New York Times*. Retrieved from <https://www.nytimes.com/2017/12/01/us/politics/hand-scribbled-tax-bill-outcry.html>
- Toder, E. (2018). For Public Company Accountants, New Tax Law Is More A Nightmare Than A Bonanz. *Forbes*. Retrieved from <https://www.forbes.com/sites/etoder/2018/06/14/for->

public-company-accountants-new-tax-law-is-more-a-nightmare-than-a-bonanza/#3f3c1e276a62

Tonello, M. (2017). CEO and Executive Compensation Practices: 2017. *Harvard Law School Forum on Corporate Governance and Financial Regulation*. <https://perma.cc/LZQ3-3YRX>

Trainer, D., & Speculations, G. (2018). Companies With Deferred Tax Liabilities Big Tax Reform Winners. *Forbes*. Retrieved from <https://www.forbes.com/sites/greatspeculations/2018/02/01/companies-with-deferred-tax-liabilities-big-tax-reform-winners/#47981066cec9>

Trainer, D., & Speculations, G. (2018). Companies With Deferred Tax Assets Lose With Tax Reform. *Forbes*. Retrieved from <https://www.forbes.com/sites/greatspeculations/2018/02/13/companies-with-deferred-tax-assets-lose-with-tax-reform/#1c947a0764cf>

Scott, W. R. (2009). *Financial Accounting Theory* (6th ed.). Toronto, Canada: Prentice Hall.

Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018). Company stock price reactions to the 2016 election shock: Trump, taxes, and trade. *Journal of Financial Economics*, 130(2), 428-451.

Wagner, A. F., Zeckhauser, R. J., & Ziegler, A. (2018b). Unequal Rewards to Firms: Stock Market Responses to the Trump Election and the 2017 Corporate Tax Reform. *American Economic Review Paper and Proceedings*, 108, 590-596.

Weisbach, M. S. (2007). Optimal Executive Compensation versus Managerial Power: A Review of Lucian Bebchuk and Jesse Fried's Pay without Performance: The Unfulfilled Promise of Executive Compensation. *Journal of Economic Literature*, 45(2), 419-428.

- White, G., Sondhi, A., & Fried, D. (2003). *The Analysis and Use of Financial Statements* (3rd ed.). New York, NY: John Wiley & Sons, Inc.
- Wilson, R. J. (2009). An Examination of Corporate Tax Shelter Participants. *The Accounting Review*, 84(3), 969-999.
- Zhang, I. X. (2007). Economic consequences of the Sarbanes–Oxley Act of 2002. *Journal of Accounting and Economics*, 44 (1-2), 74-115. doi:10.1016/j.jacceco.2007.02.002

**Table 3: Descriptive Statistics Using the Fama-French Three Factor Model (n = 674)**

<i>Variables</i>	Mean	S.D.	1 <sup>st</sup> quartile	Median	3 <sup>rd</sup> quartile
<i>CAAR[-1, +1]</i>	0.000	0.022	-0.011	0.001	0.012
<i>CAAR[-2, +2]</i>	0.003	0.027	-0.011	0.004	0.018
<i>CAAR[0, +63]</i>	0.009	0.146	-0.078	0.003	0.094
<i>CAAR[0, +189]</i>	0.014	0.332	-0.176	-0.011	0.168
<i>MTR_BI</i>	0.327	0.044	0.329	0.339	0.347
<i>GINDEX</i>	9.209	2.505	7.000	9.000	11.000
<i>DEFTA</i>	0.050	0.037	0.024	0.043	0.065
<i>DEFTL</i>	0.073	0.062	0.026	0.054	0.101
<i>COMP</i>	8.892	1.690	8.417	9.193	9.813
<i>SIZE</i>	8.514	1.494	7.402	8.364	9.617
<i>DEBT</i>	0.272	0.162	0.152	0.280	0.375
<i>ROA</i>	0.055	0.071	0.026	0.052	0.092
<i>MB</i>	4.780	7.153	1.940	2.939	4.704
<i>FOROP</i>	0.418	0.494	0.000	0.000	1.000
<i>RND</i>	0.025	0.047	0.000	0.000	0.030

This table reports descriptive statistics of data used in this study. All continuous variables are winsorized at 1 percent and 99 percent.

*Variable Definition:*

<i>CAAR[-1, +1]:</i>	Cumulative abnormal return over $[-1, +1]$ around September 27, 2017, when the framework for TCJA revealed
<i>CAAR[-2, +2]:</i>	Cumulative abnormal return over $[-2, +1]$ around September 27, 2017, when the framework for TCJA revealed
<i>CAAR[0, +63]:</i>	Cumulative abnormal return over $[0, +63]$ , from the day when framework for TCJA released to the end of 2017
<i>CAAR[0, +189]:</i>	Cumulative abnormal return over $[0, +189]$ , from the day when framework for TCJA released to the six months of being effective
<i>MTR_BI:</i>	Marginal tax rate before interest deductions ( <i>BCG_MTRNOINT</i> )
<i>DEFTAs:</i>	Deferred tax assets ( <i>TXNDBA</i> ) scaled by total assets ( <i>AT</i> )
<i>DEFTLs:</i>	Deferred tax liabilities ( <i>TXNDBL</i> ) scaled by total assets ( <i>AT</i> )
<i>SIZE:</i>	Natural logarithm of total assets in million ( <i>AT</i> )
<i>DEBT:</i>	Total debt ( <i>DLC+DLTT</i> ) scaled to total assets ( <i>AT</i> )
<i>ROA:</i>	Income before extraordinary items ( <i>IB</i> ) scaled by lagged total assets ( <i>AT</i> )
<i>MB:</i>	Market value of equity ( <i>PRCC_F*CSHO</i> ) divided by book value of equity ( <i>CEQ</i> ) 1 if there is a reported foreign exchange income(loss) ( <i>FCA</i> ); and 0 otherwise
<i>FOROP:</i>	Research and development expenses ( <i>XRD</i> ) scaled by total assets ( <i>AT</i> )
<i>RND:</i>	Gompers, Ishii, and Metrick (2003) Governance Index
<i>GINDEX:</i>	Natural logarithm of sum of compensations ( <i>over 1 million for each executive</i> ) of
<i>COMP:</i>	top five executives

**Table 4: Univariate Tests of Market Reaction to the Passage of TCJ using the Fama-French three factor model**

Variables	Mean	t value
<i>CAAR[-1, +1]</i>	0.000	0.53
<i>CAAR[-2, +2]</i>	0.003***	3.25
<i>CAAR[0, +63]</i>	0.009	1.58
<i>CAAR[0, +189]</i>	0.014	0.13

\*\*\*, \*\*, and \* respectively denote significance levels of 1%, 5%, and 10%.

**Table 5: Univariate Tests of Differences Using the Fama-French three factor model (Using before interest MTR)**

Variables	<i>Low MTR_BI</i> (Bottom 50%; <i>n</i> = 337)		<i>High MTR_BI</i> (Top 50%; <i>n</i> = 337)		<i>Low MTR_BI</i> (Bottom 20%; <i>n</i> = 135)		<i>High MTR_BI</i> (Top 20%; <i>n</i> = 134)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
<i>CAAR[-1, +1]</i>	0.001	0.000	-0.000	0.001	0.002	0.004	0.000	0.001
<i>CAAR[-2, +2]</i>	0.004	0.004	0.003	0.003	0.005	0.005	0.005	0.003
<i>CAAR[0, +63]</i>	0.006	-0.011	0.012	0.008	-0.014	-0.026	0.028*	0.027***
<i>CAAR[0, +189]</i>	0.008	-0.015	0.021	-0.010	-0.009	-0.029	0.055	0.010
<i>GINDEX</i>	9.157	9.000	9.261	9.000	8.911	9.000	9.097	9.000
<i>DEFTAs</i>	0.050	0.044	0.050	0.040	0.053	0.049	0.052	0.044
<i>DEFTLs</i>	0.069	0.052	0.076	0.058	0.076	0.054	0.077	0.063
<i>COMP</i>	8.515	8.947	9.269***	9.495***	8.260	8.771	9.424***	9.668***
<i>SIZE</i>	8.103	7.971	8.924***	8.979***	7.899	7.935	9.110***	9.124***
<i>DEBT</i>	0.261	0.277	0.284	0.281	0.278	0.297	0.273	0.271
<i>ROA</i>	0.043	0.044	0.067***	0.058***	0.009	0.027	0.064***	0.060***
<i>MB</i>	4.274	2.756	5.286	3.067**	4.171	2.460	5.643	3.293**
<i>FOROP</i>	0.445	0.000	0.392	0.000	0.415	0.000	0.455	0.000
<i>RND</i>	0.031	0.002	0.019***	0.000*	0.039	0.003	0.021**	0.001

\*\*\*, \*\*, and \* denote high tax firms are significantly different from low tax firms respectively at 1%, 5%, and 10% level.

**Table 6: Step Regression Estimation of CAAR (Using the Fama-French three factor model) for window one and two around the events of TCJA (Using before interest MTR)**

Variables	Sign Predicted	<i>CAAR[-1,+1]</i>						<i>CAAR[-2,+2]</i>					
		Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value
<i>MTR_BI</i>	+	-0.011	-0.582	-0.010	-0.492	0.025	1.046	0.010	0.409	0.008	0.314	0.041	1.377
<i>DEFTAs</i>	-			0.004	0.152	0.027	1.084			0.022	0.749	0.063**	2.033
<i>DEFTLs</i>	+			-0.020	-1.409	-0.024	-1.206			0.021	1.226	-0.021	-0.841
<i>GINDEX</i>	?					0.000	0.652					0.000	0.164
<i>COMP</i>	-					-0.002***	-3.054					-0.003***	-3.136
<i>SIZE</i>						0.001	0.713					0.001	1.102
<i>DEBT</i>						0.000	0.074					-0.005	-0.667
<i>ROA</i>						-0.008	-0.503					-0.018	-0.887
<i>MB</i>						0.000	0.002					0.000	0.023
<i>FOROP</i>						-0.000	-0.081					-0.002	-0.927
<i>RND</i>						0.028	1.215					-0.011	-0.366
<i>Constant</i>		0.004	0.647	0.005	0.743	0.007	0.425	0.000	0.028	-0.002	-0.206	-0.005	-0.223
Industry FE		No		No		Yes		No		No		Yes	
n		674		674		674		674		674		674	
R-square		0.001		0.003		0.179		0.000		0.004		0.196	

This table presents regression estimates of Cumulative Average Abnormal Return (CAAR) around different events of TCJA. All variables in the table are defined in Table 2. Industry dummies capture industry fixed effects with two-digit SIC code classifications. All continuous variables are winsorized at 1 percent and 99 percent. \*\*\*, \*\*, and \* respectively denote significance levels of 1%, 5%, and 10%.

**Table 7: Step Regression Estimation of CAAR (Using the Fama-French three factor model) for window three and four around the events of TCJA (Using before interest MTR)**

Variable	Sign Predicted	<i>CAAR[0,+63]</i>						<i>CAAR[0,+189]</i>					
		Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value
<i>MTR_BI</i>	+	0.173	1.353	0.187	1.462	0.149	0.955	0.128	0.441	0.102	0.351	0.698**	2.080
<i>DEFTAs</i>	-			-0.196	-1.270	-0.217	-1.340			-0.797**	-2.284	-0.407	-1.174
<i>DEFTLs</i>	+			-0.120	-1.299	0.010	0.078			0.442**	2.121	-0.027	-0.097
<i>GINDEX</i>	?					-0.003	-1.448					-0.003	-0.696
<i>COMP</i>	-					-0.001	-0.242					-0.007	-0.738
<i>SIZE</i>						-0.008	-1.508					-0.011	-0.884
<i>DEBT</i>						-0.036	-0.848					-0.122	-1.349
<i>ROA</i>						0.048	0.457					-0.449**	-2.005
<i>MB</i>						0.000	0.114					0.001	0.609
<i>FOROP</i>						-0.005	-0.391					0.034	1.290
<i>RND</i>						-0.241	-1.600					-0.354	-1.098
<i>Constant</i>		-0.048	-1.130	-0.034	-0.791	0.224**	2.013	-0.027	-0.287	-0.011	-0.115	0.299	1.248
Industry FE		No		No		Yes		No		No		Yes	
n		674		674		674		674		674		674	
R-square		0.003		0.008		0.230		0.000		0.013		0.309	

This table presents regression estimates of Cumulative Average Abnormal Return (CAAR) around different events of TCJA. All variables in the table are defined in Table 2. Industry dummies capture industry fixed effects with two-digit SIC code classifications. All continuous variables are winsorized at 1 percent and 99 percent. \*\*\*, \*\*, and \* respectively denote significance levels of 1%, 5%, and 10%.

**Table 8: Regression Estimation of CAAR (Using the Fama-French three factor Model) around the events of TCJA (Using before interest MTR)**

Variables	Sign Predicted	<i>CAAR</i> [-1,+1]		<i>CAAR</i> [-2,+2]		<i>CAAR</i> [0,+63]		<i>CAAR</i> [0,+189]	
		Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value	Coeff.	<i>t</i> -value
<i>MTR_BI</i>	+	0.130*	1.717	0.220**	2.365	0.891*	1.833	1.860*	1.781
<i>MTR_BI*GINDEX</i>	-	-0.012	-1.458	-0.020**	-2.029	-0.084	-1.611	-0.131	-1.175
<i>GINDEX</i>	?	0.004	1.530	0.007**	2.034	0.024	1.412	0.040	1.077
<i>DEFTAs</i>	-	0.029	1.155	0.066**	2.134	-0.204	-1.262	-0.388	-1.115
<i>DEFTLs</i>	+	-0.025	-1.252	-0.022	-0.906	0.004	0.028	-0.037	-0.134
<i>COMP</i>	-	-0.002***	-3.123	-0.003***	-3.237	-0.001	-0.320	-0.008	-0.794
<i>SIZE</i>		0.001	0.735	0.001	1.134	-0.008	-1.486	-0.010	-0.867
<i>DEBT</i>		0.001	0.079	-0.005	-0.661	-0.036	-0.844	-0.122	-1.345
<i>ROA</i>		-0.010	-0.587	-0.020	-1.006	0.038	0.364	-0.464**	-2.071
<i>MB</i>		-0.000	-0.007	0.000	0.012	0.000	0.105	0.001	0.603
<i>FOROP</i>		-0.000	-0.047	-0.002	-0.883	-0.004	-0.354	0.035	1.317
<i>RND</i>		0.028	1.180	-0.012	-0.416	-0.246	-1.640	-0.364	-1.127
<i>Constant</i>		-0.027	-0.925	-0.064*	-1.769	-0.021	-0.109	-0.085	-0.211
Industry FE		Yes		Yes		Yes		Yes	
n		674		674		674		674	
R-square		0.182		0.202		0.233		0.311	

This table presents regression estimates of Cumulative Average Abnormal Return (CAAR) around different events of TCJA. All variables in the table are defined in Table 2. Industry dummies capture industry fixed effects with two-digit SIC code classifications. All continuous variables are winsorized at 1 percent and 99 percent. \*\*\*, \*\*, and \* respectively denote significance levels of 1%, 5%, and 10%



## Appendix A

### *Deferred tax liabilities*

Company ABC purchases a machine at a cost of \$4,000 with an economic life of 4 years and book depreciation method is straight line.

Table 1: Temporary difference book and tax depreciation

Year end	Book value (Cost – accumulated depreciation)	Tax base (Cost –tax depreciation)	Temporary differences
1	3,000	2,400	600
2	2,000	1,200	800
3	1,000	400	600
4	0	0	0

When depreciation charged by the tax authority is higher than the book depreciation expense in year 1 and 2, the firm takes the tax benefit early because of the greater GAAP income relative to tax income. This situation has a positive impact on the cash flow because it defers the payment of tax. The situation reverses in years 3 and 4 when tax depreciation is less than the book depreciation and the entity has to pay additional taxes to offset the prior lower tax payments. The table also shows that accumulated book depreciation and accumulated tax depreciation are exactly same at end of the fourth year which is equal to \$4,000- cost of the asset. Table 2 presents you the amount of deferred tax liability at the end of each year.

Table 2: Creation and liquidation of *DEFTLs*

Year	1	2	3	4
Beginning DTLs	\$0	\$150	\$200	\$150
Increase/Decrease in a year	150	50	(50)	(150)
Ending DTLs	150	200	150	0

At the end of year 1, the firm has a difference of \$600 (tax depreciation - book depreciation) and the company has to pay tax on this \$600 in the future (in year 3 and 4). In this scenario, prudence, the qualitative characteristic of accounting information (SFAC 8), requires entity to recognize liability to the tune of expected tax payable. Assuming tax rate is 25% deferred tax liability in year one is  $\$600 \times 25\% = \$150$ . At the end of the second year the firm has a taxable difference of \$800 and the *DEFTLs* are equal to \$200 ( $\$800 \times 25\%$ ). As the \$150 *DEFTLs* are already recorded in year 1, additional \$50 is added in the second year. By the end of the third year the entity has a temporary difference of \$600 and the DTLs are  $\$600 \times 25\% = \$150$ . Therefore, the *DEFTLs* have to be reduced by \$50 from \$200 to \$150. At the end of year four there is no taxable difference because the tax base is equal to the book value of the asset which is zero (Table 1). So, the beginning balance of *DEFTLs* \$150 has to be reduced to zero by subtracting \$150.

#### *After TCJA*

Suppose the tax rate changes to 20 percent in the second year. Table 3 provides the effect of the change in the tax rate on the deferred tax liabilities.

Table 3: Impact of change in the tax rate of *DEFTLs*

Year	1	2	3	4
Beginning DTLs	\$0	\$150	\$160	\$120
Increase/Decrease in a year	150	10	(40)	(120)
Ending DTLs	150	160	120	0

As the tax rate changes from 25 percent to 20 percent in the second year, the increase in *DEFTLs* is only \$10 dollar, which is \$40 less than that when the tax rate was

25 percent. In year 3 beginning *DEFTLs* are reduced from \$200 to \$160 due to the reduction in tax rate from 25 percent to 20 percent.

*Impact of tax rate change on income statement*

Assuming earnings before tax and depreciation is \$10,000 each year for four years. Table 4 describes the differences in *DEFTLs* due to the reduction in the tax rate from 25 percent to 20 percent. In year 1, *DEFTLs* are the same because tax rate is 25 percent. However, in year 2, tax rate reduces from 25 percent to 20 percent which also reduces the *DEFTLs* from \$200 to \$160. DTLs \$160 is found by decreasing the year 1's *DEFTLs* \$150 by \$30 ( $\$600 \times 20\%$ ) then increasing by \$40 ( $\$1800 - \$1760$ ). Similar impact is observed in the third year as *DEFTLs* are reduced from \$150 to \$120. At the end of fourth year the temporary difference between GAAP and tax income becomes zero.

Table 4: Income Statement and *DEFTLs*

	Year 1	Year 2	Year 3	Year 4
Earnings before tax and depreciation	\$10,000	10,000	10,000	10,000
Depreciation (book)	(1,000)	(1,000)	(1,000)	(1,000)
Depreciation (tax)	(1,600)	(1,200)	(800)	(400)
Taxable earnings	8,400	8,800	9,200	9,600
GAAP earnings	9,000	9,000	9,000	9,000
Tax expense as per tax return	2,100	1,760	1,840	1,920
<i>DEFTLs</i> at 25% tax rate	150	200	150	0
DTLs at 20% tax rate	150	(120 + 40) 160*	120	0
Tax expense as per GAAP	2,250	1,800	1,800	1,800

\*( $\$600 \times 20\%$ ) \$120 + \$40 = \$160

*Journal entry considering change in the marginal tax rate*

Year 1

Account	Dr.	Cr.
Income tax expense	\$2,250	
Income tax payable		\$2,100
DEFTLs		\$150

Year 2

For year 2, there are two journal entries. First, due to the reduction in the tax rate from 25 percent to 20 percent, the past *DEFTLs* of \$150 have to reduce to \$120 and second, the *DEFTLs* arising from the difference between taxable income and GAAP which is \$40.

Account	Dr.	Cr.
DEFTLs	\$30	
Income tax expense		\$30
Income tax expense	1,800	
Income tax payable		\$1,760
DTLs		\$40

*Impact on cash flows from marginal tax rate deduction*

Because of the reduction in the corporate tax rate (from 25 percent to 20 percent), the company will be able to have surplus cash flows in terms of tax savings. For example, in the second year, the company is required to pay \$1,760 as tax expense relative to \$2,200

$(\$8,800 \times 25\%)$  leading to a surplus in cash flows of \$440 which are described in Table 5.

Total surplus cash flows over the three years are \$1,380 from the reduction in the corporate tax rate.

Table 5: Cash flow implication from corporate tax reduction

	Year 2	Year 3	Year 4
Tax expense as per tax return when there is no change in the corporate tax rate	2,200	2,300	2,400
Tax expense as per tax return when tax rate reduces from 25 percent to 20 percent	1,760	1,840	1,920
Surplus cash flows	\$440	\$460	\$480

Only impact on deferred taxes is that it reduces the *DEFTLs* (Table 3). As tax depreciation (higher tax depreciation rate relative to GAAP rate) precedes GAAP depreciation, the company takes advantage of lower taxable income early of the asset life by paying lower amount of tax. When this trend reverses in year 3 and 4, there is no tax related tax related cash flows for ABC.

## Appendix B

### Description of the Variables

Variable	Description	Source
<i>MTR_BI</i>	Marginal tax rate is calculated before subtracting financing cost from taxable income. Taxable income is calculated without considering transitory items such as special items, discontinued operations, and extraordinary items COMPUSAT item indicator for <i>MTR_BI</i> is <i>BCG_MTRINT</i> .	COMPUSTAT
<i>DEFTAs</i>	Deferred tax assets scaled by total assets ( <i>AT</i> ). COMPUSTAT item name is <i>TXNDBA</i> .	COMPUSTAT
<i>DEFTLs</i>	Deferred tax liabilities scaled by total assets ( <i>AT</i> ). COMPUSTAT item name is <i>TXNDBL</i> .	COMPUSTAT
<i>SIZE</i>	Natural logarithm of total assets in million US dollars. COMPUSTAT name is <i>AT</i> .	COMPUSTAT
<i>DEBT</i>	Total debt scaled to total assets ( <i>AT</i> ). It is calculated by adding COMPUSTAT item <i>DLC+DLTT</i> .	COMPUSTAT
<i>ROA</i>	Income before extraordinary items ( <i>IB</i> ) scaled by lagged total assets ( <i>AT</i> ).	COMPUSTAT
<i>MB</i>	Market value of equity divided by book value of equity. Market value of equity is calculated by multiplying COMPUSTAT item <i>PRCC_F</i> with	COMPUSTAT

	<i>CSHO</i> . COMPUSTAT item for book value is <i>CEQ</i> .	
<i>FOROP</i>	Firms with foreign operations. It is indicated by foreign exchange income(loss). <i>FOROP</i> equal to 1, if the firm has foreign exchange income (loss) otherwise 0. COMPUSTAT item is <i>FCA</i> .	COMPUSTAT
<i>RND</i>	Research and development expenses scaled by total assets ( <i>AT</i> ). COMPUSTAT item is <i>XRD</i> .	COMPUSTAT
<i>GINDEX</i>	Gompers, Ishii, and Metrick (2003) Governance Index. An index for variable. If the index is $\leq 5$ , a firm has strong governance structure. If the index is $\geq 14$ , a firm has poor corporate governance	Website: <a href="http://faculty.som.yale.edu/andrewmetrick/data.html">http://faculty.som.yale.edu/andrewmetrick/data.html</a>
<i>COMP</i>	Natural logarithm of sum of compensation (over 1 million for each executive) of top five executives.	COMPUSTAT
<i>MTR_BI*</i> <i>GINDEX</i>	Indicator for interaction effect between marginal tax rate before interest and corporate governance.	COMPUSTAT and Website: <a href="http://faculty.som.yale.edu/andrewmetrick/data.html">http://faculty.som.yale.edu/andrewmetrick/data.html</a>